The RUBBER AGE

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LATE NEWS *of the Industry*

Rubber Exchange to Merge With Other New York Commodity Exchanges

Raw Silk, Hide and Metal Exchanges to Form Joint Organization—Plans Expected To Be Favorably Voted Upon This Month—Norwalk and Firestone Statements Show Profits

NEGOTIATIONS conducted over a space of two years have finally crystallized into a definite and visible plan for the consolidation of four leading New York commodity exchanges, it was announced by the organizers recently. The new institution, provided the board of governors of one exchange ratifies and the entire memberships of all involved give their approval later, will take over into one merged institution the National Raw Silk Exchange, the Rubber Exchange of New York, the New York Hide Exchange and the National Metal Exchange.

According to officials of the commodity organizations, these four exchanges alone conduct a combined volume of trading representing a value in excess of one billion dollars annually. There are 973 memberships, many of them overlapping in all four organizations. Each of these memberships have an average market value of something like $1,000 and, while details of the consolidation plan are still withheld, arrangements must be made to distribute the seats in the new exchange in an equable fashion.

So far the boards of governors of three exchanges have ratified the program drawn up by the general committee, and the governors of the fourth institution are expected to take favorable action. The general committee consisted of sixteen, or four members from each exchange, and negotiations were conducted by it for many months past, it was stated.

Jerome Lewine, leading commodity factor and president of the National Raw Silk Exchange, was chairman of the general committee, and it is his opinion that "the consolidated exchange should occupy a position of great prestige and importance in the commodity and financial world." According to Mr. Lewine, it is expected that one of the important results of the consolidation will be the broadening of trading in all of the commodities affected. Members of security and other commodity exchanges have manifested keen interest and desire to acquire membership in such an organization where a single due, instead of four annual separate payments will have to be paid by a member.

All of the exchanges involved have been singularly successful since their establishment. The rubber, silk, hides, cocoa and metals exchanges represented the "new order" in New York commodity trading as the organizations which preceded them, the Cotton Exchange, the Coffee and Sugar and the Produce Exchange, were organized long before the present century arrived.

Rubber was among the first, opening its doors to trading in February, 1926, and turned over a heavy volume of business for trade and speculative operators almost from the start. The Rubber Exchange of New York also has been employed heavily in past years for hedging by importers and manufacturers, and for speculative and investment participation by outside interests, although this volume has undergone some contraction since the days of the British restriction plan, which curtailed production and export of rubber. It has been the observation of commodity operators that products under some form of artificial control usually experience greater hedging volume, as proved by the activity in the futures of raw silk, tin, coffee, cotton, etc.

The "capital funds" of the rubber and metal organizations are not as great as those of the Hide Exchange, but the exchange devoted to raw silk has a considerable amount approximating the total of the Hide Exchange. Silk and hide memberships originally were $2,500, and that in rubber $1,000, and the difference in equities redounding to the members therefore will vary considerably. While no announcement was made, it was said that a plan of settlement satisfactory to all participants in the consolidation was being formulated.

The most recent statement of the Rubber Exchange of New York, for the year ended with August 31 last, discloses a membership of 247, dues upon which aggregated $51,000. The total income for the period was $71,942, and expenditures, $64,448, leaving an excess of income amounting to $7,493. The largest item of expense, salaries and wages, totaled $30,278.

Assets of the Rubber Exchange are given as $306,369, investments in which account total $144,423. The building fund started several years ago in an effort to locate the exchange in a new building, totals $131,446, of which a

Commodity Exchanges

The comparative importance of the silk, hides, rubber and metal exchanges, in points of assets, memberships, income and volume turnover, is shown in the following table, according to the most recent financial statements issued by the organizations involved:

	Assets	Member-ships	(1) Income	(2) Annual dues	Sales cents.
New York Hide Exchange	$545,591	266	$81,475	$140	10,646
Rubber Exchange of New York	306,369	247	71,942	170	26,157
National Raw Silk Exchange	572,883	264	80,875	160	26,612
National Metal Exchange	337,207	206	59,849	200	(3)5,820

(1) Last fiscal year.
(2) Present fiscal year.
(3) Silver only. In addition, 1,763 tin contracts and 16,750 tons of copper were sold.

one-quarter interest in the "Joint Commodities Exchange" is set down at $59,042. Payments by members into this fund were suspended in 1931. Annual dues for 1932-1933 were fixed by the board at $170, compared with $250 previously.

Norwalk Shows Profit Over the Past Year—New Earnings $119,734

REPORT of Norwalk Tire and Rubber Company for the year ended September 30, 1932, shows net profit of $119,734 after depreciation, provision for doubtful accounts, federal taxes, etc. This compares with net profit in preceding fiscal year, of $98,508.

Consolidated balance sheet of Norwalk Tire as of September 30, 1932, shows total assets of $1,102,995 and surplus of $346,528. Current assets, including $307,273 cash, amounted to $805,593, and current liabilities were $79,747.

Consolidated income account for the year ended September 30, 1932, compares as follows:

	1932	1931	1930
Gross profit on sales	$408,912	$338,158	$105,705
Expenses	178,120	168,538	184,107
Operating profit	$230,792	$169,620	*$78,402
Other income	8,697	8,326	10,281
Total income	$239,489	$177,946	*$68,121
Depreciation	24,826	52,106	50,915
Discounts	21,108	15,324	3,123
Interest	.....	.....	758
Bad debts res.	36,170	11,763	66,848
Other deductions	23,651	245	4,695
Income tax res.	14,000	.....	.....
Net profit	$119,734	$98,508	*$194,460
Preferred dividends paid	25,400	.....	.....
Surplus	$94,334	.....	.....

*Loss.

Firestone Rubber Declares Dividend And Reelects Board—Reports Good Outlook

DIVIDENDS on the common and preferred stock of the Firestone Tire and Rubber Company, declared December 16, will disburse $1,207,818 to shareholders early in 1933.

The rubber industry has been fortunate, Harvey S. Firestone, Sr., chairman, told the stockholders' meeting in the Firestone club house, where most of those in the group were Firestone employes.

The report, he said, was the best in the company's history "in view of the trying conditions." Net outlets for tires and new products, including traction and railway coach tires, spark plugs, new applications of rubber to metal and a waterproof brake lining were cited as reasons for an optimistic outlook for next year.

The 25-cent common stock dividend aggregates $496,647, payable January 20 to stock of record January 5. There are 474,181 shares of preferred. Dividend of $1.50 aggregates $711,271, and is payable March 1.

Firestone's financial statement, previously reported, showed net profit of $5,151,977 for fiscal year ended October 31. H. S. Firestone, Sr., H. S. Firestone, Jr., R. A. Firestone, John W. Thomas, J. J. Shea, S G. Carkhuff, F. H. Hobson, B. M. Robinson, H. H. Hollinger and E. A. Oberlin, Jr., were re-elected directors.

Production of Tires Is Maintained But Shipments Show Severe Decline

SHIPMENTS of pneumatic casings for the month of October amounted to 1,799,136 casings, a decrease of 41.6 per cent under September this year, and 36.9 per cent below October, 1931, according to statistics released by the Rubber Manufacturers Association, Inc.

This organization reports production of pneumatic casings for October to be 2,568,641 casings, an increase of 1.2 per cent above September this year, but 13.6 per cent below October, 1931.

Pneumatic casings in the hands of manufacturers October 31 amounted to 6,785,980 units, an increase of 12.8 per cent above September 30 stocks, but were 17.2 per cent under October 31 stocks a year ago.

The actual figures are as follows:

Pneumatic Casings

	Shipments	*Production*	*Inventory*
October, 1932	1,799,136	2,568,641	6,875,980
September, 1932	3,082,285	2,538,720	6,096,098
October, 1931	2,851,653	2,973,755	8,300,065

November Rubber Consumption Still Low, Reflecting Decreased Production

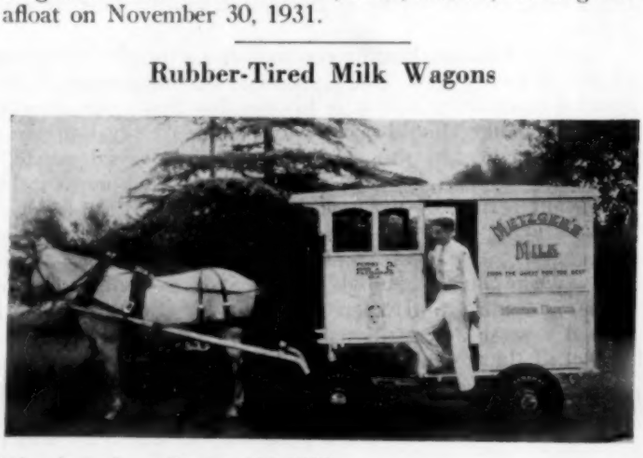
CONSUMPTION of crude rubber by manufacturers in the United States for the month of November amounted to 21,910 long tons. This compares with 21,018 long tons for October, 1932, and represents an increase of 4.2 per cent according to statistics released by the Rubber Manufacturers Association.

The Association also reports imports of crude rubber for the month of November to be 27,080 long tons, a decrease of 23.7 per cent below October, 1932, and were 38.1 per cent below November a year ago.

This Association estimates total domestic stocks of crude rubber on hand November 30 at 377,996 long tons, which compares with October 31 stocks of 373,823. November stocks show an increase of 1.1 per cent as compared with October of this year, and 29.2 per cent above the stocks of November 30, 1931.

The participants in the statistical compilation report 40,879 long tons of crude rubber afloat for the United States ports on November 30. This compares with 40,176 long tons afloat on October 31, 1932, and 58,082 long tons afloat on November 30, 1931.

Rubber-Tired Milk Wagons



(Other news of the industry will be found on Pages 214-218)

A. R. KEMP
Elected Chairman

New York Chemists Meet at Xmas Party

Annual Affair of Rubber Group Is Voted the "Best Ever"—200 Members and Guests Attend

PETER P. PINTO
Re-elected Sec.-Treas.

ANOTHER of the famous "Christmas Parties" was held on December 14 by the New York Group, Rubber Division, A. C. S., at the club rooms of the Building Trade Employers' Association, 2 Park Avenue, New York City, and was one of the most successful and enjoyable meetings ever staged by the Group. Approximately 200 members and guests attended and so entertaining was the program that the meeting did not break up until nearly midnight.

The meeting was preceded by an excellent dinner. Rubber favors, donated by Givaudan-Delawanna, Inc., were set at each plate. As a feature during the evening questionnaires listing thirty-five rubber chemical materials and ten aromatics (samples of which were on each table) were circulated and answered, with the result that A. J. Weiss, of Vulcan Proofing Company, won first prize on the general chemical quiz, with A. I. Brandt, of Goodrich, second, while Hans W. Manker and W. H. Cope took the first and second honors, respectively, in the odor contest.

Immediately after the dinner the members proceeded to the election of officers for the next year, the names suggested by D. F. Cranor, chairman of the Nominating Committee being acted upon unanimously. The list of officers for 1933 are given elsewhere on this page.

Two extremely interesting papers were then presented, both of which were illustrated by lantern slides. W. J. R. Hauser spoke on the "Impregnation of Textiles with Latex," and B. T. Bush talked generally on the subject of "Aromatics." Abstracts of these papers are given below.

The Entertainment Committee, including R. E. Casey, P. R. McCampbell and John M. Ball, arranged a most enjoyable program, which was under the direction of our inimitable Walter Grote as Master of Ceremonies. The maestro himself contributed several violin selections and introduced the other artists of the evening. James V. Loughran, singer extraordinary, rendered a number of pleasing songs. Miss Christine Messinger, concert pianist, accompanied him and also played a solo number. The well-known raconteur, Monroe Silver, kept the audience in laughter for a half hour with his humorous sketches and jokes. The end of the delightful program came with the drawings for the Christmas gifts under the large tree which added to the Christmas atmosphere of the occasion. About seventy-five presents were distributed, the drawings being accompanied by considerable fun and banter.

The companies contributing gifts for the party included the following: I. B. Kleinert Rubber Company, American Cyanamid and Chemical Company, Pequanoc Rubber Company, Callaway Mills, Maxwell Rubber Company, Givaudan-Delawanna, Inc.; New Jersey Zinc Company, Admiar Rubber Company, H. Muehlstein and Company, *India Rubber World*, THE RUBBER AGE, Norwalk Tire and Rubber Company, E. I. DuPont de Nemours and Company, Southwark Manufacturing Company, General Atlas Carbon Company, Henry L. Scott and Company, Binney and Smith Company, Naugatuck Chemical Company, R. T. Vanderbilt Company, Lea Fabrics, Inc.; Vulcan Proofing Company, A. Gross and Company, Wishnick-Tumpeer, Inc.; Philadelphia Rubber Works Company and the Brooklyn Color Works Company.

Officers of the N. Y. Rubber Group
1933

Chairman: **A. R. Kemp, *Bell Telephone Laboratories***
Secretary-Treasurer: **Peter P. Pinto, *The Rubber Age***
Executive Committee:
J. P. Coe, *Naugatuck Chemical Co.*
A. F. Schildhauer, *E. I. du Pont & Co.*
P. R. McCampbell, *I. B. Kleinert Rubber Co.*
B. R. Silver, *N. J. Zinc Co.*
A. F. Tallmer, *U. S. Rubber Reclaiming Co.*
R. D. Gartrell, *U. S. Rubber Co.*
W. B. Wiegand, *Binney & Smith Co.*

ABSTRACTS OF PAPERS

Impregnation of Textiles with Latex

W. J. R. HAUSER, *Vice-President, Heveatex Corp. of America*

The paper reviewed the history of latex as regards its application to textiles. Recent research into the question of impregnability of fabrics with latex have definitely proved that if plain latex of suitable concentration, which may or may not contain vulcanizing ingredients, is used for impregnation, a more or less uniform coating is obtained but *no* penetration of the rubber into the inside of the fiber. Results of experiments in the laboratory of the author's company abroad, as to the degree of penetration or impregnation obtainable, were summarized. Considerable progress in the chemistry of fibrous materials as well as in the knowledge of latex in general has been made during the last few years and consequently we are today not only in possession of substances which when added to latex in very small quantities will considerably change its colloidal dispersability, thus leading to considerable increased penetrability, but we have also learned how to open the fibers to an extent which will allow the rubber from latex to penetrate more readily into the fiber.

Aromatics

B. T. BUSH, *Bushfield, Inc.*

The efforts along research lines which are being constantly made to develop aromatics were described. It was particularly pointed out that many plant odors have never been possible of reproduction, so far, in spite of intensive experimentation and that many aromatics are synthetically developed not from the flower but by chemical compositions which will most nearly produce the desired odor.

Some Factors Involved in the Banbury Mixing of ZINC OXIDE in Rubber Stocks*

By W. C. MATHEWS *and* G. S. HASLAM

Research Division, New Jersey Zinc Company, Palmerton, Pa.

ABSTRACT

THE laboratory Banbury mixer is used to evaluate the mixing characteristics of various (commercial and experimental) samples of zinc oxide, and to act as a guide in establishing the variables in mixing procedure which may be of importance on commercial units.

The several types of zinc oxide vary in the ease with which they incorporate into rubber and in the excellence of the dispersion finally obtained, these two variables being mutually independent. The effect of particle size and condition of the surface on these properties of the mix has been studied.

The mixing procedure used also affects the ease of incorporation and final dispersion. The effect of the type of rubber used, temperature, softeners, ram pressure, rotor speed, loading factor, pigment-rubber ratio, rate of addition, water addition, sheeting off and subsequent milling, rotor clearance, and power consumption is discussed.

While procedures established on the laboratory machine cannot be followed directly on commercial installations, it has been found possible to translate the results of these experiments into factory practice with a reasonable amount of experimentation on the larger unit. The evaluation of the mixing characteristics of oxides on this machine have also been found to correlate well with those obtained commercially.

BECAUSE considerable attention has been concentrated on the direct mixing and master-batching of zinc oxide in the Banbury mixer during the past few years, it was thought desirable to summarize the work that has been done on our laboratory size mixer (Figure 1) in the hope that the findings may be applied to large scale work.

Contacts with the rubber manufacturers have led us to believe that the results obtained on the laboratory Banbury cannot always be applied directly to the factory set-up; in fact, we have found that a variation in procedure on one large mixer may not give the same effect when that variation is applied to another mixer of the same size. These data, therefore, are of value in that they point to some of the variables that may affect the end result and which should be studied before establishing a mixing procedure. As a research organization, the problem of developing tests which will properly evaluate pigments and show trends in processing changes as an aid in the development of new pigments was also a prime consideration with us.

There are very definitely two factors involved in a study of this kind, *ease of incorporation* and *dispersion*. By "ease of incorporation" we mean the time required for a zinc oxide to admix with rubber to form one continuous mass. By "dispersion" we refer to the macroscopic appearance of a freshly cut surface of the rubber mix, the presence or absence of visible pellets of undispersed pigment. It has been our experience that zinc oxide that does not appear as pellets is usually found to be well dispersed when examined under a high power microscope. For the sake of convenience we have established a method of numerically evaluating the macroscopic appearance of the cut surface of the rubber slab. This grading is illustrated in Figure 2. The values run from 0 which is an extremely poor dispersion to 10, which is essentially perfect. A small amount of carbon black master batch is added to the mix in order to make it easier to see the white pellets of zinc oxide.

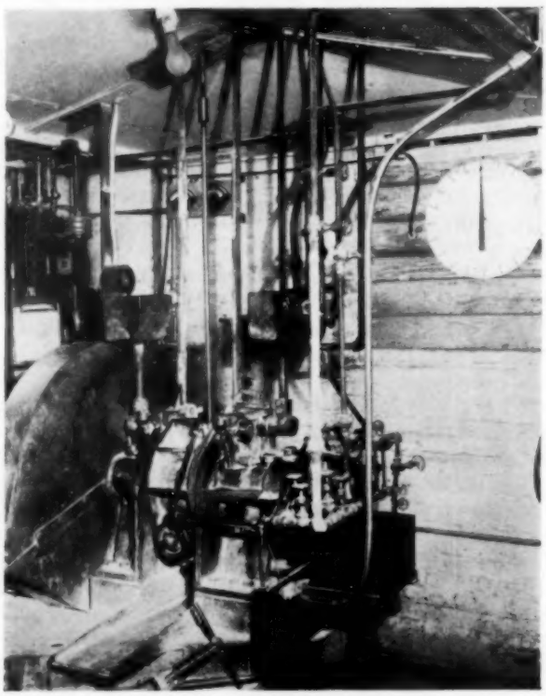


Figure 1

General View of the Laboratory Banbury Mixer

The first factor mentioned, ease of incorporation, may readily be improved at the expense of the second, dispersion, but this compromise is, of course, undesirable. A balance must be reached that will give the most satisfactory dispersion in the minimum time. This much is true if ease of incorporation is ignored, there is no problem. We know that the various types of zinc oxide which we intend to discuss can be satisfactorily dispersed in any size Banbury, when proper consideration is given to the factors involved. It is our problem, therefore, to find that procedure which will require the minimum time to give maximum dispersion, or to develop a pigment that will disperse satisfactorily in the shortest possible time.

The two factors which are of paramount importance in so far as the pigment is concerned are particle size and condition of the surface. Obviously, the more pigment surface present the greater will be the work required to wet that surface with rubber. Everything else being equal, the coarser the particle size, the better the ease of incorporation will be. It is not always possible or desirable to use a coarse particle size material because of the accompanying sacrifice that must be made in physical properties. In this case, a

*Paper presented before the Rubber Division, A. C. S., Denver, Aug. 23, 1932.

Figure 2
Grading Series Showing Range of Dispersions (Number at Left is Numerical Evaluation)

Figure 3
Series of Dispersions Obtained With Various Types of Rubber — From Top to Bottom, L. S. Rubber, Smoked Sheet, Masticated Crepe and Reclaim, Whole Tire—Alkali Process. Numerical Evaluation Shown at Left

fine particle sized oxide, the surface of which has been coated with a substance which is more readily wet by rubber, will greatly improve the dispersion and when properly handled, the ease of incorporation as well. With these two properties of particle size and condition of surface in mind, we will consider a number of variables in Banbury procedure and manipulation with respect to both ease of incorporation and dispersion.

Type of Rubber

The type of rubber used is of primary importance in mixing zinc oxide, the best results coming from those types which are fairly stiff and which maintain a high plasticity in the mixing. Fifteen-minute masticated smoked sheet gives decidedly better dispersions than fifteen-minute masticated crepe, while latex sprayed (L. S.) rubber is better than smoked sheet and all three are better than reclaim. The dispersions obtained with various types of rubber are shown in Figure 3.

Master batches made from smoked sheet and sprayed latex are decidedly stiffer than the pale crepe master batch, so although the dispersion is decidedly superior they should not be used for a high volume zinc oxide master batch. The resultant mix would be so stiff that it might crack the rolls when used in subsequent processing and in general be difficult to mill in. These stiffer master batches have a very dry appearance, similar to stocks in which the pigment is in a flocculated state although the visual dispersion is good.

With an untreated oxide the effect of varying the amount of breakdown given the rubber seems to be small; the best results have been obtained by adding the oxide to the rubber before it becomes too tacky. In the case of the surface treated pigments the amount of breakdown is of somewhat greater importance. It has been found that too much or too little breakdown will result in failure of the mix to mass, that is, to have a tendency to form a mealy mix with no continuous rubber phase present, such as shown in Figure 4. The most satisfactory way of avoiding this difficulty is to control the amount of breakdown given the rubber so that it is fairly tacky when the pigment is added. In the laboratory mixer pre-masticated pale crepe which has been broken down for less than one minute or more than four minutes shows a tendency toward failure to mass, while mixes made with the same rubber broken down as specified, are satisfactory.

Temperature

Three temperature variations have been considered, the starting temperature, the mixing temperature, and the final temperature. The first two can be controlled mechanically, while the last mentioned is influenced largely by the first two and other conditions of the mixing procedure.

It has been possible to vary the starting temperature from 25°C. to 125°C. and the temperature selected has been governed by several factors. First, the degree of breakdown, discussed above in connection with massing, must be considered. The use of a low starting temperature gives the optimum breakdown conditions for massing, while a higher temperature makes the rubber soft and does not give the mechanical breakdown necessary. In the case of slow curing oxides, which have not been surface treated, a high starting temperature has been used with some success. This has been done without danger of scorching and is recommended only for compounds which are not critical.

The mixing temperature can be controlled by the temperature of the water passing through the jacket. In general, during the addition of the oxide too low a temperature has been found detrimental to the dispersion. However, after the pigment has been added and the mix has massed, it is helpful to keep the temperature fairly low in order that the batch will be as stiff as possible. Working a stiff batch definitely does more mixing work and gives a superior dispersion.

Softeners

Since softeners must be added in practically all compounds, their effect was studied both with master batches and straight mixes. No marked improvement in dispersion has been noted when softeners were added to the mix before the zinc oxide and in many cases a decidedly poorer dispersion resulted. It was felt that the addition of softeners early in the mixing cycle should aid in the massing of the treated oxides, but we were unable to show any improvement in this respect on the laboratory mixer. In general, we have adopted the practice of adding the softener as late as possible in the mixing cycle in order to eliminate any variation from this source.

Ram Pressure

The effect of ram pressure has been found to be rather striking. It has been possible to study their phase of the procedure rather easily, as this installation has been equipped with a hydraulic ram which permits the variation of the ram pressure over a fairly large range. With treated oxides that are not difficult to disperse but cause trouble in incorporation, it has been found best to use as high a pressure on the ram as can be obtained. When mixing untreated oxides, particularly of the coarse type, it has been found best to use only a slight pressure on the ram, or even no pressure at all, until

Figure 4
A Rubber-ZnO Mix That Failed to Mass in the Banbury Mixer

the rubber and oxide are intimately mixed together. This may result in a mealy mix but after the oxide has all been added and the pressure applied the mix readily masses and the dispersion is superior to a mix made with continuous ram pressure. When working with fine particle sized oxides it has been found that pressure can advantageously be applied; that is, the more work done on the mix, the better the dispersion will be.

Rotor Speed

It is in the consideration of the effect of rotor speed that the laboratory mixer has its greatest advantage over the factory Banbury, because of the larger variations that may be made with this machine. The speed of the large Banbury must be maintained com-

paratively low while with the small machine, speeds from 30 to 90 r.p.m. may be easily obtained. In this connection it should be remembered that the peripheral speed is the essential factor, rather than the revolutions per minute. With treated oxides it has been found that the best dispersions and the least trouble with massing is experienced at high rotor speeds. In other cases, however, the best dispersions are obtained by using a slow speed although this practice necessitates a longer mixing time. For most purposes we have found that a speed of 45 r.p.m. approximates the factory unit most closely. Our best mixings have been obtained by using very slow speeds while the ingredients are being added, and a speed almost twice as fast during the actual mixing of the oxide. This results in less breakdown than would be obtained if the faster speed had been used entirely and in addition gives decidedly improved dispersions. This latter procedure, however, is not applicable at the present commercial Banbury installation.

*Loading Factor**

The total volume of compound to be prepared and the time available for mixing are the considerations determining the best

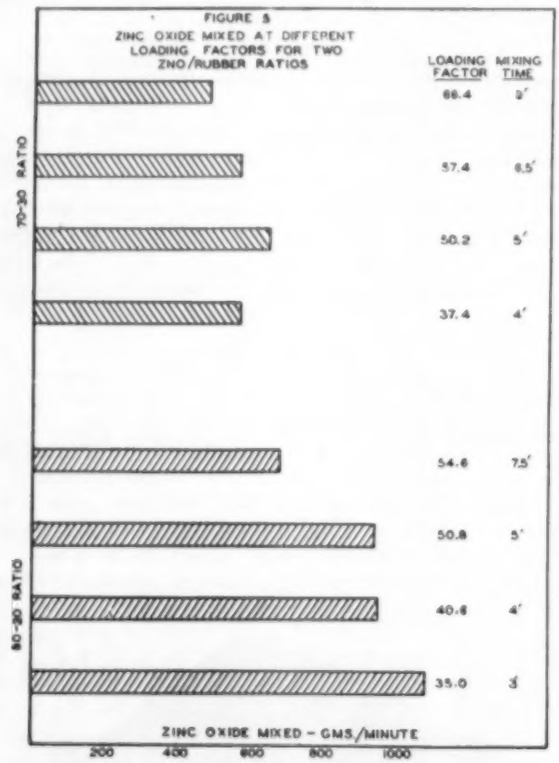


Figure 5
Showing Relation Between Loading Factor and Mixing Time and Amount of Zinc Oxide Mixed

loading factor. With the treated oxides it has been found that the best results can be obtained with a high loading factor, in fact, with very low loading factors with this type of oxide, it has sometimes been found almost impossible to cause the rubber to mass. With untreated oxides, however, it has been found that the best dispersions are obtained with relatively low loading factors. When the time factor for the volume of stock to be mixed is considered, it has been found that the best loading factor lies between 40 and 50 per cent, so that the additional time that may be allowed tends to give an improved dispersion. The use of still higher loading factors gives approximately the same amount of stock per unit time but does not allow the variability in procedure that may be obtained with the above specified loading factor. These results are shown graphically in Figure 5.

*"Loading factor" is the ratio of the volume of the compound to the free volume of the Banbury.

Pigment-Rubber Ratio

It has been found in most of the work that the dispersion improves as pigment-to-rubber ratio is increased, the best dispersions resulting with 80-20 mixes or higher. However, it must be borne in mind that certain types of oxides, especially those of fine particle size, will give a mix too stiff to be easily handled and may offer some difficulty during subsequent breakdown after cooling. This necessitates the use of a lower ratio, such as 70-30, with these mixes and a slight sacrifice in dispersion must be made.

In direct compounding it has been found advantageous to withhold part of the rubber, actually mixing all the zinc oxide at a high pigment-rubber ratio and then adding the remainder of the rubber. This procedure has resulted in decidedly superior mixes both in dispersion and tensile strength.

Rate of Addition

The rate of addition of the zinc oxide to the batch after the original breakdown is of considerable importance. Because the construction of the laboratory Banbury is quite different from commercial installation in as far as the superstructure is concerned, it has been impossible to study this phase of the problem as thoroughly as would seem desirable.

Our experience with high zinc oxide ratios, indicate that care must be exercised not to "drown the batch," the oxide must be added slowly enough to allow mixing of one addition before a second is made. This is particularly necessary in the case of the treated oxides, which may show less tendency to mass than the untreated oxides. The danger in too rapid addition of the oxide in this case is encountered before the mix has massed, for apparently after massing the rate of addition does not play a very important part.

With low zinc oxide ratios which will give no trouble with massing, the best results have been obtained by adding the oxide slowly and at the same time using a low enough ram pressure and loading factor that the mix does not mass until the oxide has all been added.

Water Addition

The addition of water to the batch just prior to the end of the mix has been a common practice for some time and in most cases is added because of the improvement in the dispersion which results. This improvement is partly due to the lowering of the temperature which sufficiently stiffens the mix so that a greater amount of work is done by the mixer. There seems to be, however, a further improvement in the dispersion that cannot be accounted for by the lower temperature of the mix. The final mixing temperature is lowered by from 5 to 10°C. by the addition of water, but a similar lowering of the temperature by running cold water through the Banbury will not give the same improvement in dispersion. The maximum improvement in dispersion from water addition has been obtained by adding the water in three small portions at about one-minute intervals beginning two or three minutes after all the oxide has been added.

In working with the treated oxides at loadings at which they mass with difficulty, it has been found that the addition of water will bring about immediate massing of the mix. In such cases the best results have been obtained by adding the water immediately after the last portion of oxide has been added.

Sheeting Off and Milling

The rubber mix coming from the Banbury is in small chunks, a state in which the dispersion would be difficult to grade. In order to facilitate the grading we have adopted a standard procedure of sheeting off the rubber on the rolls. In this procedure the rubber is placed on the mill and cut three times, left and right, and then rolled. It is then twice passed endwise through the mill, the opening of the mill being increased after each pass. The rubber is given one more pass through the mill and the final sheet, which is approximately three-quarters of an inch thick, is allowed to cool before grading. It has been found that the change in dispersion during this operation while the rubber is still warm is relatively small, in

fact any addition milling gives very little change in the dispersion of the mix. However, if the mix is allowed to cool, a two-minute breakdown will improve the dispersion from a grading of 4 to a grading of 10, regardless of the type of oxide used in the mix. When a small amount of a poorly dispersed master batch is added to a compound on a mill, this breaking up of the pellets is less marked, but there is a considerable improvement in the dispersion if the master batch has been cooled sufficiently and is added before the stock becomes too soft.

Banbury Rotor Clearance

It is impossible to study the effect of the clearance between the walls of the Banbury mixing chamber and the rotors without a considerable amount of expense in the investigation of different rotors. However, it is felt that this factor is of considerable importance for it has been established that older installations which are somewhat worn give more satisfactory results than new ones of the same type. In order to determine if there was any effect from changing the clearance in the Banbury, a small gasket was fitted to the sidewall where it fastened to the Banbury proper so that the clearance between the wall and the rotor at that point was changed from .08 of an inch to .15 of an inch. With this change an improvement in the dispersion was noted, the grading going from 8 to 9+, using the same oxide and same mixing procedure.

Power Consumption

While power consumption is ordinarily a result of the pigment and procedure which are used, it is an important commercial factor which can be studied with the laboratory unit equipped with a watt hour meter. It is felt that the results obtained are relatively correct, and that any change in procedure or pigment affecting power consumption can be evaluated.

The use of a recording watt meter has the additional advantage of offering considerable diagnostic aid in studying the effect of a number of the variables mentioned above. For instance, in Figure 6 are reproduced two charts showing the effect of surface treatment on power consumption. The various steps in the procedure are recorded on the charts, which indicate rather clearly that there is a considerable power saving in mixing the treated oxide. Since changes in procedure or pigment do make relatively large differences in the power-time curve, it would seem advisable to make such a study in establishing a factory mixing procedure.

Summary

As a result of these various studies several procedures have been adopted which are being used to evaluate new pigments and pigment developments, as well as to control the production of established pigments. Two typical procedures are given below. It is felt that these procedures are applicable in their entirety, to the single installation for which they were developed, and that to obtain maximum results on any other installation, it is necessary to observe the variables discussed above.

The procedure used to evaluate dispersion is as follows:

Procedure A

Banbury Conditions

Starting temperature	65°C.
Rotor speed	68 r.p.m.
Ram pressure	12.5 pounds per sq. in.
Loading factor	51.1 per cent

Batch Composition

Fifteen-minute masticated crepe	1340 grams
Zinc oxide	3200 grams
Twenty per cent carbon black master batch	72 grams

Mixing Cycle

0 minutes—rubber added
1.5 minutes—412 grams of zinc oxide added—ram down
2.0 minutes—412 grams of zinc oxide added—ram down
2.5 minutes—412 grams of zinc oxide added—ram down
3.0 minutes—412 grams of zinc oxide added—ram down
3.5 minutes—412 grams of zinc oride added—ram down
4.0 minutes—412 grams of zinc oxide added—ram down
4.5 minutes—412 grams of zinc oxide added—ram down
5.0 minutes—412 grams of zinc oxide added—ram down
5.5 minutes—Loose oxide cleaned from ram
6.5 minutes—Stock dumped

Sheeted off on mill in slab three-fourth of inch thick and allowed to cool before grading.

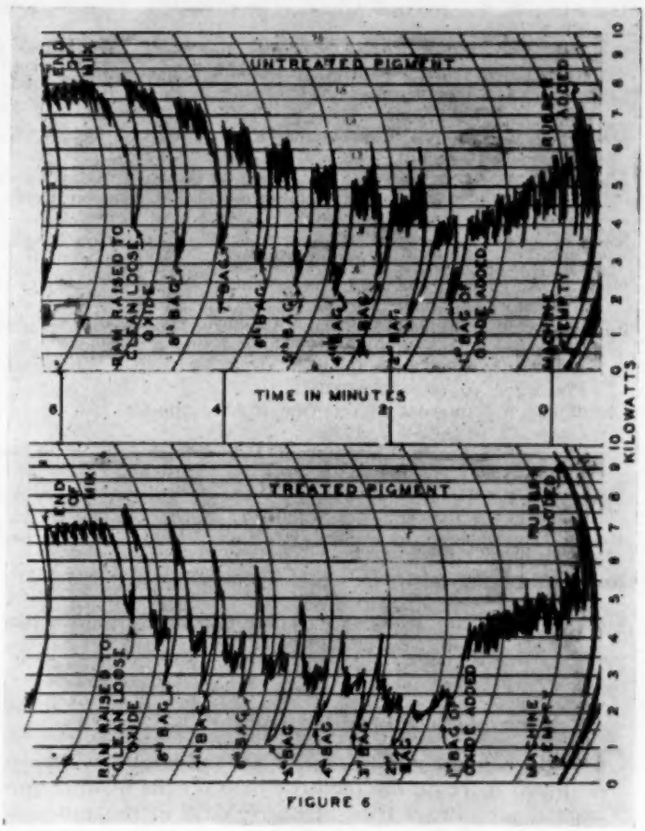


FIGURE 6

Power Charts

To evaluate ease of incorporation with untreated oxides quite a different procedure is used. The ease of incorporation is measured by the time required for the batch to become sufficiently mixed. By examination of the power and temperature curves as well as by observation of the mix, the time at which the batch masses can be observed as a further aid in establishing the relative ease of incorporation of the oxide. The procedure follows:

Procedure B

Banbury Conditions

Starting temperature	65°C.
Rotor speed	32 r.p.m.
Ram pressure	12.5 pounds per sq. in.
Loading factor	45 per cent

Batch Composition

Fifteen-minute masticated pale crepe	974 grams
Zinc oxide	4144 grams
Twenty per cent carbon black master batch	76 grams

Mixing Cycle

0 minutes—rubber added
2 minutes—345 grams oxide
3 minutes—345 grams oxide
4 minutes—345 grams oxide
5 minutes—345 grams oxide
6 minutes—345 grams oxide
7 minutes—345 grams oxide
8 minutes—345 grams oxide
9 minutes—345 grams oxide
10 minutes—345 grams oxide
11 minutes—345 grams oxide
12 minutes—345 grams oxide
13 minutes—345 grams oxide

Stock dumped as soon as mixing is complete.

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Tire Failures?

THE amount of mileage a tire gives today depends much more on the motorist than on the manufacturer. This was not always true. In early days of the automobile era methods of tire construction were such that a tire's life was very definitely limited, regardless of the care exercised by the car owner. Today, however, such great progress has been made in building tires, that all quality lines possess thousands of miles of satisfactory service. But it is up to the motorist to get this mileage.

Numerous reports brought to the attention of the United States Rubber Company indicate that the fate of most tires is to be placed on the wheels and then be forgotten. A complaint recently made by a bus line illustrates the abuse which tires often undergo. A check-up of the situation revealed the following:

Drivers did not carry tire gauges. Infrequently they checked their tires by kicking them. They might as well have bitten them.

Tires were not correctly inflated. Tire pressures should have been 70 pounds. Investigation showed pressures varying all the way down to 20 pounds.

Inflating equipment was not to be had at either end of the 250-mile run, and buses were not stopped at predetermined points for actual inflation checks. Moreover, wheels were mounted so that hand holes were out of line, thereby preventing the possibility of inflation.

Buses were not equipped with jacks to allow road changes. If a tire failed, the bus was run to the nearest road service point before a change was made. Spare tire pressures were found to be zero.

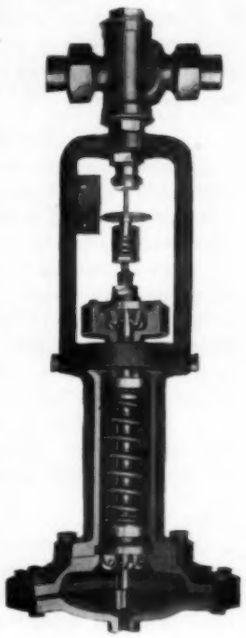
Front wheel alignment was not correct, one bus having a toe-out of three-eighths inch. Vehicle springs were weak and in bad shape, allowing the inside tire of dual equipment to rub the frame and wheel housings. No effort was made to keep the buses off the road shoulders as much as possible to relieve the inside tire of excessive overloading and overheating.

Buses were scheduled to operate not in excess of 40 miles an hour. Their actual speed was checked and found to run much higher, being clicked up to 56 miles an hour.

Yet, the bus line complained of poor tire service. The marvel is that the tires ran at all.

New TAG Valve

AFTER more than a year's service on hundreds of installations, the TAG friction-free diaphragm valve is now formally announced by C. J. Tagliabue Manufacturing Company, Brooklyn, N. Y. This improved super-structure is mounted on TAG V port balanced values giving gradual opening characteristics.



opening characteristics.

Friction is cut down to a minimum by reducing the diameter of the spindle passing through the stuffing box. The spindle is perfectly guided by its upper (large diameter) portion which passes through two roller bearing assemblies, each consisting of four stainless steel rollers. Roller bearings are preferred to ball bearings for guiding the reciprocating spindle movement in a frictionless manner.

The spring (single or multiple) is enclosed as is also the diaphragm; a position indicator is furnished; adjustments are easily made, available with 7½", 9½" and 11½" diameter diaphragm.

Tire Performance and Speed In Bus Coast to Coast Run

THAT a bus-load of nearly three dozen passengers could be transported across the nation, from coast to coast, at a total fuel cost of less than $30 and at record speed, if desired, has just been demonstrated by two nationally-known figures in American automotive circles—Dave Evans, veteran A. A. A. race driver, and C. L. Cummins, designer and manufacturer of American Diesel motors for heavy duty automotive equipment.

Cummins and Evans have just finished driving a 32-passenger bus, with a loaded weight of more than ten tons, from New York to Los Angeles in the elapsed time of 91 hours and 10 minutes, their actual running time being 78 hours and 10 minutes.

Regarding tire performance on the run, Evans and Cummins said at Los Angeles: "The bus was equipped with six General dual grip 9.75 by 22 truck balloon tires. Not one second's delay was occasioned by tire trouble, although the ten-ton vehicle was pushed over rough roads and around turns at speeds as high as 65 miles an hour."

Statistics of the run include:

Total mileage was 3,220 miles.
Average running speed, 41.2 miles per hour.
Average speed for time elapsed, 35.3 miles per hour.
Total fuel consumption, 365 gallons of fuel oil.
Cost of fuel oil, 6 cents per gallon.
Total fuel cost, $21.90.
Estimated average weight of bus, with load, 21,500 pounds.
Consumption of engine lubricant, 5 quarts.

This run followed closely upon the heels of another record-breaking test, held on the Indianapolis Speedway, when a Diesel-motored truck was driven by Evans and Cummins for two weeks without stopping, piling up 14,600 miles of continuous driving, on General truck balloon tires, the only effect on the tires being one thirty-second of an inch of tread wear in the middle of the treads.

An Automotive Engineer's Case Against the Doughnut Tire

By DELMAR G. ROOS
Chief Engineer, Studebaker Corporation

THE views which I express are not opinions, but are based on actual experience. As a result of our investigations of doughnut tires, we feel that their advantages are very limited and questionable. We think they represent a trend in the wrong direction and that they merely bring up again the same questions which were raised when low-pressure balloon tires were brought out about eight years ago.

The difficulties which we have found with the tires in use are:

(1) The use of the super-balloon tire, or doughnut tire, is limited to small cars, because the diameter of the brake drums required on cars of over 3,500 pounds is 14 to 15 inches or more. This means that a satisfactory wheel cannot be used under 17 inches, and this limits the tire size practically to a 7.50 on anything but the very biggest cars. The proportion of a 7.50 tire to a 17-inch rim is not that of a super-balloon tire, as is for example an 8-inch tire on a 15-inch rim, which is being recommended in some cases for small cars having 11- or 12-inch brake drums.

Therefore, it follows that proportionality in tire size cannot be followed all the way from the small car to the big car without getting into either very small wheels, or else a complete change in brake design, with the introduction of an entirely new school of problems in brake design. Experience has shown that brake drums should be kept down in width in proportion to diameter, if effective distribution of pressure on the shoes is to be obtained.

(2) These tires, when turning corners very rapidly, if used with inflation pressures recommended, roll way over on their sides so that the tire is actually running on the side of its tread, and not on the face.

Shimmy Problem Aggravated

Added to this is the fact that, so far, all tires that we have seen are extremely noisy on curves, on pavement.

(3) When using this type of tire we found the shimmy problem aggravated just as it was eight or ten years ago, when the balloon tire first made its appearance, and was operated at comparatively low pressures. This problem can be handled reasonably well, but the car is more sensitive, at the best, to shimmy conditions.

(4) The steering of the car is very much harder in parking, and the steering sense of the car, to a certain extent, is lost; by that I mean the feeling that the car is steering itself, a quality in the steering which is only obtained after close study and careful design.

In this connection it is very evident, in driving a car equipped with these tires, that there is a tendency to oversteer at high speed; in other words, in making a curve at higher speed, due to roll-under of tire, there is a greater tendency to swerve further toward the inside of the curve than the driver ordinarily experiences with a normal tire under the same movement of the steering wheel. Allowance must be made for this in driving, and this is increased as the tire pressure goes down.

(5) Life. We have found, when operating super-balloon tires at pressures recommended by the manufacturers, that the life of the tire was unsatisfactory, judged by present existing standards. As we have increased the tire pressures, the life of the tires has improved. When we have finally operated them at pressures practically the same as are now used on ordinary balloons, the life of the tire has been quite satisfactory, but the so-called riding qualities of the tire have been lost.

Serious Danger of Blowouts

(6) The manufacturers of these tires have endeavored to minimize the danger of blowouts. Unfortunately, the matter of whether a tire blows out or not is entirely a matter of its age, the speed at which it is being operated and the condition of the roads over which it is being operated, and tires have an unsatisfactory way of blowing out without giving any warning as to which tire is going to blow out and when.

I have seen sidewall rips occur in super-balloon tires, which let the air out almost instantaneously. If a car is traveling at high speed the centrifugal force tends to hold the tire out, but as the car passes down through a 45-mile speed the centrifugal force diminishes and the tire begins to knot around the wheel rim and renders the car practically uncontrollable. We have found that in the case of rear tires under certain conditions the car is even less controllable than if the flat occurs on the front wheels. Expert drivers have been able to control cars under these conditions, but with great difficulty, and only when conditions were favorable as to width of road, freedom from traffic and a knowledge beforehand that the tire was to be deflated. Considering the density and speed of modern traffic, I consider this as one of the most dangerous hazards of the super-balloon tire, especially when a set of tire equipment begins to get old.

(7) The statement that these tires add to the riding qualities of the car is true, but only if low pressures are used in the tire, and the results are only satisfactory, in my opinion, for town work, where there are cobble stones and rough streets to be encountered at low speed. They, in my opinion, are positively dangerous for cross-country driving at high speed.

(8) In my opinion, the development of this tire was unnecessary and can be rendered still further unncessary if the engineering fraternity turns its attention to chassis design. We have gone about as far as we can go with the present type of automobile suspension. New types of chassis suspension are sweeping Europe for the sole reason

*Reprinted from *Automotive Daily News*, Dec. 9, 1932.

that all manufacturers there recognize that, to get all the riding possible out of an automobile, there must be a change in fundamental chassis design, both as to weight distribution and springing. They recognize that this is not the province of the tire alone and that to attempt to obtain improved riding solely by the use of extra size tires is the wrong way around the problem.

The super-balloon tire is an attempt to accomplish with the tire too large a percentage of the task which should be divided between the tire and spring. It must be recognized that a tire can never wholly replace a spring in an automobile because of the fact that there must be some dampening provided in the shape of a shock absorber. Experience up to date shows that a shock absorber, or its equivalent, is a necessary adjunct of a spring in order to secure dampened springing. A tire, from its very nature, cannot be dampened satisfactorily. If it is operated at such low pressures that dampening occurs through internal side wall friction, the life of the tire is, of course, reduced. If the tire is run at sufficient pressure to avoid internal side wall and carcass friction, then it is not dampened except to a very small extent.

A general axiom might be written to the effect that we should give to the springs and shock absorbers the portion of the work which they are supposed to do, and we should render to the tire the portion of the work which it in turn is supposed to do—these being complementary one to the other, but neither one can supersede the other.

(9) In my opinion, the answer to good riding, based on the foregoing experience, is not doughnut tires, but a change in chassis design. I might say that this is the sentiment I encountered in Europe. Most of the engineers I talked to there were quite definitely against the oversize tire.

Market for Rubber Goods In the United Kingdom

A 20 per cent duty on manufactures (other than sheets, piping, tubing and rods, and machinery belting) wholly or partly of rubber, balata, or gutta-percha (including vulcanite and ebonite) from foreign countries became effective in the United Kingdom on April 25. Rubber footwear is one of the main items under this classification.

Boots and Shoes

Imports of rubber boots into the United Kingdom in 1931 totalled 236,742 dozen pairs as compared with 175,090 dozen pairs in 1930. The principal countries of supply were as follows:

	1931 Dozen Pairs	1930 Dozen Pairs
Canada	74,621	64,925
Japan	64,447	....
United States	32,630	42,704
Germany	21,522	9,096
Czechoslovakia	17,409	16,008
Sweden	10,944	5,127
France	7,920	6,952
Denmark	1,787	11,255
Poland	386	18,597

The feature of this table is the strong position assumed by Japan and the falling away of competing continental suppliers. Imports of rubber shoes (overshoes and goloshes) in 1931 totalled 935,762 dozen pairs, compared with 1,069,372 dozen pairs in 1930; and here again the leap taken by Japan into the front rank of suppliers is noteworthy:

	1931 Dozen Pairs	1930 Dozen Pairs
Germany	184,380	255,349
Japan	167,014	8,058
Czechoslovakia	139,190	30,102
Belgium	133,910	423,693
Canada	116,768	167,803
Poland	91,042	35,510
United States	21,489	53,591
France	18,516	41,933

An additional duty of 3d. per pair on rubber boots and 2d. per pair on rubber shoes from foreign sources of supply came into force on October 20. Representative selling prices (including the 20 per cent duty) for Japanese boots, ex-agent's warehouse, as compared with English, were approximately as follows before the new duties were imposed:

Japanese	English
Men's, 5s. to 5s. 6d. per pair	8s. 6d. per pair
Misses' (11-2) 25s. to 26s. 6d. per doz. pairs	2s. 11½d. per pair
Child's (4-10) 18s. to 18s. 6d. per doz. pairs	2s. 5½d. per pair

To the Japanese price, 3s. per dozen would require to be added to allow for the new duty, which would leave the prices still fairly attractive. Canadian makes are about on the same level as English prices.

Imports of rubber heels and soles totalled 2,258 tons in 1931 compared with 3,141 tons in 1930. Canada was the chief source of supply with 2,070 tons (1930, 2,562 tons), followed by the United States with 149 tons (430) and Belgium with 26 tons (141).

Miscellaneous Rubber Imports

Rubber toy imports have steadily increased in value from year to year, and totalled £160,325 in 1931. The United States was the chief source of supply (£53,394), followed by Germany (£49,248) and Japan (£28,471). The difference in exchange plus the duty has affected adversely imports from the United States. In toy balloons, of which there was a heavy import from the United States, English manufacturers are offering strong competition. Canadian balloons have also received a share of the trade.

The Japanese have practically captured the market in other forms of inflated toys—play-balls, water toys, etc.—with products that are strong and of good appearance, and are offered at very low prices. Thus beach balls, 12 inches inflated (15 inches deflated), have been bought by one large multiple store at from 6d. to 7d. each free delivered warehouse.

Rubber aprons and overalls were imported in 1931 to the extent of 606,566 dozen valued at £196,406. Of these, 595,615 dozen came from Germany. One important German firm apparently controls the market. The aprons made by this concern have a large range of designs, are well finished, and are offered retail at about 6d. each. This firm also offers an attractive line of bathing helmets at low prices.

Bathing shoes are extensively supplied from Germany. Prior to the imposition of the additional duty of 2d. per pair, one large departmental store was purchasing them at the rate of 7s. per dozen delivered, as compared with the English price of about 9s. 6d. per dozen.

Hot-water bottles, for which there is always a good demand, remain largely of home manufacture. There are two types—the cheap molded and the fibre reinforced. Prices for the former this season have been as low as 1s. 3d. each wholesale; one large chain drug store has offered a molded bottle retail at 1s. 6d. each. The fibre reinforced bottles ranged in price from 3s. upwards.

Household rubber gloves are retailed at a variety of prices according to quality; on the average, the price is between 6d. and 1s. Import figures for all types of rubber gloves totalled 58,881 dozen pairs, of which Germany is credited with 25,627 dozen pairs (1930, 9,739) and the United States with 25,281 dozen pairs (30,005). The number from British countries—presumably all from Canada—was 6,139 dozen pairs (1930, 2,371).

In sponge rubber goods—such as sponges, chair cushions, bath mats, etc.—Germany is one of the principal sources of supply. Rubber sponge bath mats of foreign manufacture, of excellent color designs, 21 inches by 14 inches, were being sold by one large departmental store at 2s. 11d.; for a mat size 20 inches by 30 inches the retail price was 4s.

EDITORIAL COMMENT

Make Industrial Sales Now

"THE fundamental problem of the seller of industrial equipment at the present time is to prove to the buyer the net profit which will arise from the purchase of his equipment," Mr. Herbert P. Bailey, president, The Rotor Air Tool Company, said in an address on the subject of "How to Make Industrial Sales Now" at the Industrial Marketing Conference of the American Management Association, at the Hotel William Penn, in Pittsburgh, on Tuesday, December 6th.

Mr. Bailey emphasized the fact that today those who buy industrial equipment buy in order to reduce the cost of existing production. This is in contrast to the major motive of the years 1928 and 1929 during which buyers were stimulated to consider ways of increasing production.

"Today our selling presentation should visualize in facts and figures the opportunity for the customer to realize net profits from the purchase of our equipment to reduce costs," Mr. Bailey said. "Our sales presentation must face the fact that the scale of production of our customers is low, and hence our net profit summary must reflect accurately the results which will be realized under the actual shop conditions of the customer.

"In order to overcome the existing financial resistance to buying," Mr. Bailey continued, "our presentation should summarize the facts in the form of the percentage of net profits to be expected from the investment. This is the language of the treasurer, and the only basis on which he will release cash for investment in fixed assets. The selling process today must be broadened to carry the sales presentation through the factory executive to the treasurer and chief executive, and the sales should, therefore, contain all the facts necessary for a decision by each of these executives, inasmuch as equipment buying is definitely controlled by the chief executive in consultation with the treasurer.

In his address Mr. Bailey suggested a method for the sale of industrial equipment under present conditions, which he illustrated by an actual example selected because it was typical of the net profit approach to equipment selling.

"The practical application of the net profits approach to equipment selling requires first of all a change of the point of view of the individual salesman," Mr. Bailey stated. "Instead of 'selling equipment,' he is now focusing his attention on increasing the net profits of his customers. He is interpreting his product to the buyer with definite evidence of how fast it will pay for itself rather than devoting his main energy to a discussion of the product itself, to competition or to generalities. In order to prepare a net profit statement, the salesman is forced to get the necessary production facts. The resulting net profit statement must be presented and checked with the factory executive to be sure the facts are correct. In addition, the salesman must now sell the treasurer and chief executive type. The approach to these men is, of course, best made through the factory executive by helping him to get the appropriation, but any attempt by the salesman to leave the matter in the hands of the factory executive for presentation to the chief executive is weak. This in turn requires that the salesman must make preliminary contact with the treasurer and chief executive types.

"A general understanding of the true net profits arising from the intelligent replacement of equipment would undoubtedly stimulate greatly the total purchases of industrial equipment in the years ahead," Mr. Bailey said in concluding. "And finally, the general use of the net profits approach in selling industrial equipment would eventually bring us all to a suitable reward in the form of net profits from our own business."

Rehabilitating the Factory

POINTING to the sound economic principles underlying the national movement for industrial rehabilitation and stressing the present prostration of the "capital goods" industries, Mr. Malcolm Muir, in an address at a dinner of the Industrial Marketing Division of the American Management Association at the Hotel William Penn in Pittsburgh on December 5th, urged the industrial executive and the retail merchant alike to rehabilitate their plants or places of business. Mr. Muir is president of McGraw-Hill Publishing Co., Inc., and vice-chairman, National Committee on Industrial Rehabilitation.

Speaking of the prostration of the "capital goods" industries—those devoted to the manufacture of machinery, equipment and plant facilities for factories and retail establishments, Mr. Muir stressed the fact that 1,620,000 workers are out of jobs today in capital goods plants. Expenditure for this type of goods, he added, has dropped from an average annual expenditure of $5,760,000,000 to approximately $1,260,000,000 yearly.

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Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.

The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

FUNSTON LOOKS FORWARD TO GOOD SALES YEAR

W. H. Funston, Jr., recently appointed president of the Firestone Tire and Rubber Company of Canada, Limited, is making for the first time a tour of eastern Canada for the purpose of looking over conditions and considering advertising and merchandising plans with distributors.

Seen at the Mount Royal Hotel, Mr. Funston said that sales during the past year had been satisfactory and that the company was looking forward to an increased turnover in the coming year. He believed that part of the company's success was due to the fact that it had been heavy national advertisers during the past year. When business was slowing up judicious and carefully planned advertising was needed, he said, since the tendency was for advertising to lag behind business.

"If I were asked today," he said, "how 1933 business will be compared with that of 1932, I would say that it will be better, and I base my statement on the following facts: Canada as a nation is not poor; neither are Canadians, taken as a people, poor. I am assured that the per capita wealth of Canada is the second highest in the world. There is no doubt but that in the years of 1924 to 1929 we all went on an orgy of spending which was far from wise. In 1933 we are not going back to those, shall I say in some ways, wild days, but we are going to buy and for three reasons.

Replacement Buying is Inevitable

"The first is our absolute need for many things. During the past few months we have curtailed our necessary expenditure to such an extent that we lack not only the luxuries but many of the necessities and comforts of life. We have put off buying new clothes, we have not replaced the car this year, we have not undertaken repairs to property which may have been very necessary, and so on.

"Secondly, we are beginning to realize that only as we spend within reason will the wheels of commerce begin turning and keep on going. And lastly, we have the money to spend."

Mr. Funston will visit Quebec, Halifax, N. S., and St. John, N. B., afterwards returning to his headquarters in Hamilton. He will then undertake a tour of inspection in the west, terminating at Vancouver. He is accompanied on the trip by J. A. Livingston, sales manager of the company.

Give a Job.

"Patriotic Tires"

Red, white, and blue is the newest scheme in colored tires, judging from a recent delivery by the United States Rubber Company to the Columbia Nite Coach Lines, Inc., of Dallas, Texas.

The patriotic hues of the tires were chosen to match the color scheme of the coaches themselves. The coaches are said to be revolutionary in design, offering marked advance in appearance, luxury, and efficiency. The first coach is now en route on a transcontinental maiden trip.

Officials of the United States Rubber Company explained that the red, white, and blue pattern was a special job that would not be placed in regular production. They added, however, they would not be surprised to receive an order for a set of tires reflecting the colors of the rainbow.

Discusses Tire Discount Plan

Following a conference held December 13, by Harvey Firestone, Sr., rubber manufacturer, and George T. Bishop, chairman of the Rubber Industry Advisory Board, it was learned that a "trade discount plan," proposed by Mr. Bishop, had been discussed.

While no statement was made by either Mr. Firestone or the head of the advisory board, it was believed in rubber circles that Mr. Bishop was seeking Mr. Firestone's support for the plan which is reported to have been recently adopted at a New York conference.

According to information available, the plan provides for "altering discounts" to large commercial fleet buyers of tires, eliminating competitive discounting.

Rim Production Increased

Rims inspected and approved by the Tire and Rim Association, Inc., in November totaled 454,947 against 281,749 in October and 638,138 in November, 1931.

For eleven months 5,445,578 rims were approved, compared with 11,422,725 in like period last year.

Rubber Association Dinner

The Rubber Manufacturers' Association will hold its annual dinner on the evening of January 9, 1933, at the Waldorf-Astoria. Details of the program and the names of the speakers are not available at this writing. The usual business of the Association and election of officers will take place in the morning of the same day. Tickets will be $6.00.

SOFT TIRES WASTE GAS IS RESEARCH REPORT

Gasoline mileage has a direct ratio to tire inflation, Ray G. Paustian of the Iowa state highway commission has discovered after three months of research.

Soft tires mean wasted gas, Mr. Paustian says. His tests show that for every 10 pounds the tire is allowed to drop below its normal pressure an eight per cent decrease in mileage is obtained from gasoline.

The experiments also showed that the tire diameter increased one-half inch as the speed of the car varied from zero to 60 miles per hour. On the cars used in the experiment, there were seven fewer revolutions of the wheels per mile at 60 miles per hour than there were at five miles per hour.

Seiberling Cuts Salaries

Seiberling Rubber Company general and factory office employes' checks for December 1 to 15 were 12½ per cent less than the ones they have been receiving twice each month since January, 1931.

Charles W. Seiberling, vice-president of the company, confirmed reports of the reduction. The cut will affect more than 150 workers in the two Akron offices, Mr. Seiberling said. The reduction is the second in two years for the Barberton plant.

"We delayed the move as long as possible," Mr. Seiberling said, "because we believed business would readjust itself enough to make a second cut unnecessary."

Canadian Tire Exports

New Zealand was the largest importer of Canadian pneumatic tire casings in October, the number being valued at $52,177. British South Africa got 4,850 at $29,780, Brazil 4,626 at $34,936, British India 4,404 at $30-810 United States 3,205 at $33,056, Spain 3,463 at $25,938. Fifty-four countries bought Canadian rubber tires in October, the total being 41,522 at $322,869, compared with 27,269 at $167,495 in September and 41,431 at $337,758 in October 1931.

The West Company

The West Company, 130 Library Street, Chelsea, Mass., has announced that it has acquired by purchase all the formulas owned and used by the H. T. West Company, together with all machinery and equipment for manufacturing and compounding the rosin oils and pitches which the older firm marketed.

Give a Job.

"FINGER PRINTING" TIRES TO PROMOTE SAFETY

In the interest of greater safety in winter driving, tire dealers of the United States Rubber Company are now making free "safety print" tests which scientifically determine a tire's safety rating. The "safety print" test is a new development in the tire industry. It was devised by engineers as an accurate check-up on worn tires, as essential to motoring security as the established tests for brakes, steering gear, and other vital operating parts of a car.

The test is considered especially important at this time because this is the most dangerous driving period of the year. More fatal automobile accidents occur in fall and early winter than during any other period, according to figures compiled by the National Safety Council.

Engineering research in connection with the development of the "safety print" test produced figures emphasizing that the margin between safety and danger is a matter of only a few feet. The research showed:

A car equipped with new tires, or with old tires which still leave a sharp non-skid impression, can be stopped from a 30-mile-an-hour speed on wet asphalt in 51 feet. These tires have 100 per cent rating of winter driving safety.

A car equipped with tires that leave an impression which is smooth in the center and non-skid on the edges can be stopped from a 30-mile-an-hour speed on wet asphalt in 74 feet. These tires, which require an additional 23 feet to bring the car to a stop, have a safety rating of only 55 per cent. They do not offer security.

A car equipped with tires which are completely bald and leave a smooth impression from edge to edge can be stopped from a 30-mile-an-hour speed on wet asphalt in 76 feet—provided the car does not hit something first. These tires, with only 51 per cent safety rating, are very dangerous.

Vine Punctures Tires

Motorists have a new worry, for now they have to be on the watch for the troublesome "puncture vine," which is a new menace to automobile tires, says the *Philadelphia Record.*

This plant, which is appropriately named, is a small creeping vine native of the Mediterranean countries. While it is very innocent looking, beneath its leaves it bears hard burrs that have projecting thorns almost as long and hard as tacks. The burrs are so shaped that one or more of these thorns are always up, regardless of the position of the burrs. These thorns are stiff enough and long enough frequently to puncture tires.

The "puncture plant" was somehow introduced into Western States a number of years ago and has been spreading to other parts of the country. It has been a real menace to motorists in California, where it is now costing something like $150,000 a year in an effort to exterminate it. It grows best in dry climates and is very common in the desert region of the Southwest. Its fondness for growing along roadsides is what makes it such a menace to motoring.

Gillette Sales at Record

The Gillette Rubber Company, Eau Claire, Wis., has scored a new high record in sales with approximately 40 per cent more units of Gillette tires and tubes being sold in the first eleven months of 1932 than in the same period in 1931.

The intensive drive for sales that has met with such success has gone from coast to coast and involved the establishing of 107 new jobbers and 2,200 new dealers, spread over forty-five states. The outstanding selling job is continuing, with men traveling in all but three states of the Union.

Finger Printing Tires

Crude Rubber Production

Summaries of crop returns of 615 rubber producing companies, principally British, in British Malaya, Dutch East Indies and Ceylon, show a production of 207,415 tons of crude rubber for ten months ended October, 1932, a decline of 4 and 5 per cent as compared with the same period in 1931 and 1929, respectively, according to the Commerce Department's Rubber Division. This decline, it is pointed out, is significant especially as 1929 was the peak year for world rubber production, the total having been about 860,000 tons.

Rubber production statistics for 536 estates in October, 1932, show a net decline of 14.7 per cent as compared with October, 1931, the 1932 figures embracing 129 estates reporting an average increase of 14.8 per cent and 407 estates reporting a decline of 24.2 per cent.

Fisk Rubber Co. Stocks

The New York Stock Exchange has received notice from the counsel for the receivers for the Fisk Rubber Company that transfers in the common 1st seven per cent preferred, 1st convertible preferred and 2nd seven per cent cumulative convertible preferred stocks will not be made after December 31, 1932. In view of this fact, recommendation may be made to the governing committee to strike these securities from the list on or before the above date.

Flower Company Starts

The Flower City Rubber Company, Fostoria, O., which rceently was moved there from Monroe, Mich., is now in production. The plant at present is producing only rubber gloves and balloons. Other products will be made later.

Bulletin Features Zimate

The November-December issue of *Vanderbilt News,* the house organ of R. T. Vanderbilt Company, is devoted to the application of Zimate as a Booster for Captax and Altax in rubber compounding.

Rubber Stock Quotations

	Last Price		—1932—	
	Dec. 19	Dec. 5	High	Low
Aetna	1½	1½	3	1½
American Hard Rubber	—	—	—	—
Faultless	—	20	25	12
Firestone	14⅝	12⅞	18⅓	10⅝
do. 6% pfd.	63½	63½	68	45½
Fisk	⅛	⅛	⅝	⅛
do. 1st pfd.	¼	¼	2⅝	¼
General	25	30	45	25
do. pfd.	30	—	—	—
Goodrich	4½	5	12⅝	2¼
do. pfd.	12¼	12⅜	33	7
Goodyear	16	13⅞	29⅝	5½
do. 1st pfd.	39¾	—	69½	19¾
India	3½	3½	7	½
Kelly Springfield	1	—	2⅞	½
8% certfs. pfd.	—	14	24	7
Lee	4⅞	5	7⅞	2
Mohawk	2	—	4	1
do. pfd.	20	—	—	—
Norwalk	—	1½	2½	⅝
Pirelli	—	30⅛	31¾	21
Raybestos-Manhattan	6¼	7¼	12¾	4⅞
Seiberling	2	2¼	4½	1
do. pfd.	14¾	—	22	7
Thermoid	1¼	1⅞	4	⅞
U. S. Rubber	4⅛	4⅛	10¼	1¼
do. pfd.	—	8	20¾	3¾

Faultless Company Report

Faultless Rubber Company reports for year ended June 30, 1932, profit of $104,785 after depreciation and write-down of crude rubber to market price, but before federal taxes, comparing with profit of $314,721 in preceding fiscal year.

Current assets as of June 30, 1932, including cash of $227,578, amounted to $875,421 and current liabilities were $28,508, comparing with current assets of $974,832 and current liabilities of $40,262 on June 30, 1931.

India Meeting Postponed

India Tire and Rubber Company stockholders' meeting at Mogadore recently was adjourned until January 10 without action and without hearing the annual report which was not ready for presentation.

Election of directors and subsequent election of officers for the ensuing year was delayed until the adjourned meeting.

To Present Perkins Medal

Plans are now being completed in New York City for the ceremonies in connection with the presentation of the Perkin medal to George Oenslager, Goodrich research chemist, on January 6.

In charge of the American section of the Society of Chemical Industry, which awards the medal annually, the presentation will be attended by some of the prominent scientists in the United States.

Dr. Oenslager's selection for the Perkin medal, regarded as one of the highest honors which can be bestowed upon an American chemist, is based on the pioneering work he has accomplished for the rubber industry on organic accelerators as well as other chemical research contributions. Several Goodrich research workers are planning to attend the presentation.

Charles A. Frank

Charles A. Frank, former traffic manager for the Firestone Tire and Rubber Company, Akron, died recently at his desk in the office of the Arrow Ruling and Binding Company, of which he was secretary-treasurer, at Cleveland, O. He was 53.

Born in Dayton, O., he went to Akron in the employ of the Firestone Company about fourteen years ago and after four years there came to Cleveland to establish the Arrow Ruling and Binding Company.

He is survived by his widow and two children, Kenneth Frank and Mrs. Virginia Proudfoot.

BERT C. HALLOCK has been elected president of Whitestone Rubber, Inc., a corporation recently formed in Killingly, Conn., to manufacture a puncture-proof tire tube and other rubber goods. JAMES HALLOCK is treasurer and CLARK W. BURNHAM, secretary. The corporation, which has occupied a mill building in which manufacturing operations are being started, has an initial paid-in capital of $2,500.

Names in the News

J. H. MCGILL, B. F. Goodrich Company departmental auditor, addressed 70 members of the company processing division, November 29th, at the second winter meeting of the group in the Goodrich dining room. Mr. McGill talked on company accounting systems. J. E. NOONAN, processing superintendent, was in charge of the meeting.

RICHARD A. NORTH has been recently appointed by Farrel-Birmingham Company, Inc., Ansonia, Conn., to the position of

RICHARD A. NORTH

assistant chief engineer. Born in New Haven, Conn., he attended the public schools of that city and prepared for college at the Hotchkiss School, Lakeville, Conn. After his graduation from Sheffield Scientific School of Yale University he entered the Research Department of the Barrett Company, Edgewater, N. J., as research engineer.

From April, 1931, to September, 1932, he served as Technical Assistant to the Vice-President in Charge of Operations, of the Grace Lines, Inc., severing this connection to join the Farrel-Birmingham Company, Inc.

Mr. North is a member of the American Society of Mechanical Engineers, the Yale Engineering Association, and the honorary societies of Sigma Xi and Tan Beta Pi. He now makes his residence at Ansonia.

J. C. RAY has been appointed tire sales manager of the United States Rubber Company for the central division, with headquarters in Chicago, according to a recent announcement by L. M. SIMPSON, general sales manager of the company. Mr. Ray was formerly manager of auto and truck tire sales in the Detroit general offices.

B. J. LEMON, of the United States Rubber Company, and TORE FRANZEN, of the Chrysler Corporation, Detroit, spoke before the Cleveland section of the Society of Automotive Engineers, on the evening of December 12, on the subject of super-balloon tires.

W. S. RICHARDSON, merchandising manager of the mechanical division, the B. F. Goodrich Company, Akron, Ohio, was in charge of a series of conferences with managers of mechanical division branches of the company from the Far West, which started December 5th, and continued through for a week. Branch managers attending the conference were M. E. SCHMIDT, Denver; L. L. HORCHITZ, Los Angeles, Calif.; W. D. RIGDON, San Francisco; and F. D. RANYARD, Seattle, Wash.

BAILEY C. MORRISON, in the tire division of the B. F. Goodrich Company, Akron, Ohio, is on his way to the factory of the Societe Francaise B. F. Goodrich at Colombes, France, it is announced by E. H. BARDER, general superintendent of the Goodrich tire division. Mr. Morrison is expected to stay at the tire plant three months. He has been in the tire division at Goodrich nearly 20 years and while in France will study methods there and demonstrate progress being made in tire construction.

DR. W. N. JONES, formerly general superintendent of the B. F. Goodrich Company processing division and now director of engineering at Carnegie Institute of Technology, presided at the meeting of the Akron section of American Chemical Society, November 29th at the Akron University Club. DR. H. H. LOWRY, director of coal research laboratories at Carnegie, was the speaker.

EDMUND A. HUGHES has been appointed district advertising manager of the B. F. Goodrich Rubber Company with headquarters in the Albany, N. Y., branch, it is announced by FRANK A. HARRISON, manager of the Albany branch.

Mr. Hughes has been identified with merchandising Goodrich products five years. Among some of his activities have been the following: sales promotion manager, Brooklyn, N. Y., branch; assistant to the district manager, New York City; special merchandising survey work through New York State; operating and merchandising manager, Goodrich Silvertown, Inc., New York district; manager of corporation sales, headquarters at Akron; and National Accounts division in New York City.

J. D. TEW, president; V. I. MONTENYOHL, treasurer, and S. M. JETT, secretary, of the B. F. Goodrich Company attended the December meeting of company directors in New York City, December 13.

MRS. NELSON GOODYEAR, grand-daughter of Charles Goodyear, discoverer of the vulcanizing process, spoke on the life and achievements of her famous ancestor at a meeting in the State Normal School at New Haven, Conn., December 12. The speaker, who is the widow of Nelson Goodyear, displayed objects of rubber which are now family heirlooms and described her grandparent's efforts which resulted in the vulcanization discovery in 1839.

Canadian Goodyear Dividend

Quarterly dividends for the last three months of 1932 have been declared by the Goodyear Tire and Rubber Company of Canada on both preferred and common shares. The declaration are $1.25 per share on the common and 1¾ per cent on the preferred, both payable on January 3, 1933, to shareholders of record December 16, 1932. This company has maintained its dividends throughout the year, and is officially reported to be in a strong position in spite of trying conditions in the rubber industry.

Establishes Safety Record

Eighty-five consecutive days without a single lost time accident is the new safety record of the United States Rubber Company at its Passaic plant.

One of the features of the plant's safety program is a large illuminated "safety gauge." Each day of the month is represented on the gauge by a light. If no accident is reported a red light is displayed. The number of the department in which the accident occurred is placed opposite the red light, so that employees can tell at a glance who was responsible for breaking the plant's safety record.

Vulcanized Rubber Moves

The executive headquarters of the Vulcanized Rubber Company are being transferred from the old address at 251 Fourth Avenue, New York, to new offices at 261 Fifth Avenue.

This move is being made to bring the company's showrooms into the heart of New York's buying district, the new quarters lying half way between the Pennsylvania Station and the Grand Central Terminal. In the furnishing of the new offices, special attention has been given to a modern display and reception room, where out-of-town visitors can be welcomed in comfort and privacy. Among the company's chief products are Ajax hard rubber combs, pipe bits, syringes, and molded articles.

Paranite G.O.P.

Due to the development of Paranite G.O.P. by Manhattan Rubber Manufacturing Company, it is now possible to produce rubber tubing and hose that is entirely unaffected by petroleum derivatives, according to the claims of the manufacturers. The paranite compound is a substance similar to rubber in appearance and physical characteristics. Base compound is a refined hydrocarbon sulphide known as Thiokol.

The hose is lined with Paranite either in pure form or combined with oil resisting rubber. Two automobiles are now using a six to eight-inch piece of this tubing to carry gasoline to the carburetor on the heavily rubber-mounted motors.

Goodrich Xmas Savings Fund

Distribution of more than 4,500 Christmas savings checks totaling $300,000 to B. F. Goodrich Company employees began Thursday, December 1st. The checks represented savings deducted from their pay during the last year in accordance with voluntary designations by the employees. The savings were deposited in the First-Central Trust Company, Akron, Ohio.

New Rubber Goods

"Tite-On" Rubber Soles

In keeping with the times, and the demand for cheap footwear, Van Cleef Bros., Chicago, Ill., have developed the "Tite-On" rubber shoe sole, which retails at 20 cents per pair. These soles can be applied by any person on any kind of shoes, taking but a few minutes, no tools being required. They

are made with new live rubber and their design provides a non-skid surface. They are available in either black or tan, in a range of sizes to fit every shoe. They also serve to convert ordinary shoes into sport shoes for golf, tennis, hiking, etc.

Rubber-Tired Toys

The Kenton Hardware Company, Kenton, O., makers of cast iron toys, are now introducing most their toys equipped with rubber tires. The tires are said to have added considerable to the appeal for these toys. The

tires act as a cushion when the child runs the toy over furniture, diminishes noise and makes the toy look more realistic. Chance of breakage is also minimized.

"Chromatex" Floor Mats

Color has been one of the major points in automobile design for years. Throughout all this transition period, however, one dull, drab spot on the car has remained. That has been the floor mat. B. F. Goodrich Company now announces that color has triumphed even here and that it is making colored rubber floor mats available to the public for the first time.

Designated as "Chromatex," these mats are made by an exclusive process by which the color is impregnated in the rubber.

Color design is a brown, mottled with silver. This combination was decided on because it harmonizes with any upholstery. The mats are made in five sizes, either all-rubber, or with felt backs so they can be tailored to fit any size or make of car. They are equally satisfactory for both front and rear compartments.

Two sizes are specially designed for Fords and Chevrolets, with cutouts punched so they can be readily fitted. Special mat cutting tools are furnished distributors so cutouts on other sizes can be made and the Chromatex mats tailored to fit with little effort.

Dog Couches

The American Pad and Textile Company, Greenfield, O., has recently announced the perfection of a specially designed dog couch. The couch is scientifically made, according to the manufacturers, to resist collecting odors and discourage the presence of fleas. It is filled with kapok, for which

vermin are said to have a distinct dislike, and has a secondary cover of rubberized fabric. The couches are made up in various sizes to accommodate different types of dogs and are artistically finished to fit in with the most tasteful house furnishings.

Tumbler and Dish Racks

New uses are constantly being found for rubber by research scientists in that industry. Among the latest are Anode rubber covered tumbler and dish racks for service wagons used in hotels and restaurants just announced by the Miller Rubber Products Company, Inc., division of the B. F. Goodrich Company, Akron, Ohio.

These racks, in any comparatively large size can be covered successfully with a 3/64th inch coating of Anode rubber.

Such an application reduces the breakage and chipping of dishes and glassware and in addition eliminates most of the noise that comes from loading and unloading the service wagons or occurs as they are being wheeled to and from dining rooms.

Adoption of rubber covering to tumbler and dish racks follows introduction by the Miller company several months ago of rubber covered dish drainers for use in homes.

Dodges Have Doughnuts

The new Dodge models, which made their appearance recently, carry super-balloon tires as standard equipment. The wheel base is 111¼ inches.

· Rubber News Around the World ·

MARKET FOR GOLF BALLS IN JAPAN

Golf has been played in Japan for nearly thirty years, and there are now over forty links scattered throughout the country; one or two of these are comparable to the best in the world in general layout, but the greens are not up to the best standards, according to a report of the Canadian Assistant Trade Commissioner in Japan. Although the laying out of a number of public courses has brought the game within reach of the middle class, golf may still be considered a rich man's game in Japan.

No statistics are available of the imports of golf balls, but Great Britain and the United States are practically the only sources of supply. Great Britain, due to more favorable exchange rates, is at present doing a much larger business than the United States. The Dunlop company of England has probably the largest sale of any individual firm. Other British firms engaged in exporting golf balls to this country are the North British Rubber Company, Spalding's, and Silvertown. The two largest United States suppliers are the United States Rubber Company and Spalding's.

Japanese golf balls are seldom if ever used by golfers who take high rank as players, except for practice. Many miniature courses as well as indoor and outdoor golf practice places are now being operated, and the domestic product caters to this demand. The output of the only large producer in Japan does not exceed 1,000 dozen balls per month.

At present, sales of the mesh type of ball are double those of the recessed type. For unknown reasons, however, this proportion changes from time to time, and it is expected that the recessed type will become more popular. The larger American ball is not as yet much in demand in Japan.

Foreign Competition

Spalding's and Dunlop's first-grade balls are at present retailing at 16 yen (yen equals $.204 U. S. currency at present exchange) per dozen. The cheapest American balls on the market retail at 7 yen per dozen; the cheapest British ball at 7.50 yen. Spalding's of England's "Berwick" and "Blue Triangle" retail at 12 yen and 10 yen respectively. United States Spalding's balls are slightly higher. The United States "Jack Rabbit" retails at 8 yen, "Tiger" at 8.50 yen, and "Fairway" at 11 yen.

Canadian golf balls have been introduced, but their prices have been entirely out of line as compared to English and United States balls. There is little prospect of selling first-grade Canadian balls in this country unless they are advertised, but there should be at least a small market for the cheaper balls if Canadian manufacturers could meet the price.

There is an ad valorem duty of 25 per cent on imported golf balls.

Rubber on London Street

The Court of Common Council of London Corporation has given permission to the Dunlop Rubber Company, Fort Dunlop, England, to lay experimental rubber blocks in New Bridge Street, adjoining the rubber blocks already under test in that street. Permission has been granted on the understanding that the experiment is carried out free of all cost to the corporation.

Malayan Shipments Up

Of the total 40,098 tons of crude rubber exported by British Malaya during November, 21,347 tons were shipped to the United States. Of the 37,931 tons exported during October, the United States received 21,042 tons, according to figures received by the Rubber Exchange of New York, Inc. During November, 1931, Malaya exported a gross quantity of 48,012 tons, of which 36,049 tons were for the United States.

Malayan exports to other countries last month were: to the United Kingdom, 4,181 tons against 4,192 tons in October; British possessions, 649 tons against 1,278 tons; the Continent, 8,837 tons, against 7,251 tons; to Japan, 4,097 tons against 3,128 tons; other countries, 400 tons, against 484 tons during October. Gross latex revertex exports were 587 tons against 556 tons in the previous month.

Rubber Stocks Increased

Dealers' stocks of rubber in the Far East amounted to 30,123 tons as of November 30, or 29,404 tons on a dry weight basis. This compares with 26,270 tons, dry, reported at the close of October, and with 41,372 tons at the end of November, 1931.

Such stocks have shown a tendency to increase since the low point, 19,798 tons, dry weight, was reached at the end of July, 1932.

The total last month comprised 14,036 tons of smoked sheets, 12,132 tons of crepe, 1,908 tons of unsmoked sheets, and 2,047 tons of scrap and lump.

Australian Dunlop-Perdriau

In his annual address to the stockholders of the Dunlop-Perdriau Rubber Company, Ltd., of Australia, W. A. Watt, chairman, said the accounts showed a net profit of £207,340 ($1,036,700), whereas the preceding year's profit was £175,319 ($876,595). Full allowances had been made for depreciation and taxation requirements. In the difficult conditions which ruled over the last 12 months the board considered this a creditable achievement.

Kleinert Rubber Co.

I. B. Kleinert Rubber Company is paying $200,000 principal amount of 6 per cent notes, representing the last instalment of an issue of $1,100,000 principal amount originally sold in January, 1926.

BRITISH INDIA FACTORY OPERATING 24 HOURS

The modern tire factory of the India Tire and Rubber Company (Great Britain), Ltd., which was opened at Inchinnan, near Glasgow, in 1927, when the McKenna import duties were introduced, now gives employment to over 1,000 workers, consisting largely of coal miners trained by the company, and providing work in an area where stable industry is now at a low ebb.

An output of no less than 1,400 units per day is being maintained, and, with the exception of the inner tube manufacturing section, the plant is now engaged for 24 hours per day, on the three-shift system. The company states that its tires are entirely British, Egyptian cotton being employed for the fabric and Malayan rubber for the treads, with various chemicals embodied which are made locally.

Rubber Roadway Progress

Sir Stanley Bois, chairman of Rubber Roadways, Ltd., have a cheerful survey of the activities and prospects of this embryonic industry at the firm's annual meeting recently. During the past year another important addition has been made to the demonstrations of rubber roadways, 1,200 square yards of the Gaisman improved block having been laid in Hull last August. This brings the total up to 12 demonstration stretches, and Sir Stanley declared that but for the crisis and the consequent curtailment of road projects, there was no doubt that other areas would have been laid.

"The efforts of the company," he declared, "in cooperation with the R. G. A. and certain manufacturers, coupled with a growing appreciation of the possibilities of rubber as a road surface, lead me to anticipate that the day is not far distant when it will be recognized that rubber roadways have emerged from the demonstration stage and must become established as an industry of importance and of value to the Empire."

Dutch Increase Tapping

Advices from Amsterdam, relayed by London in a recent cable to the Rubber Exchange of New York, Inc., state that the latest statistics on the rate of tapping on rubber estates in the Dutch East Indies have given rise to great disappointment in the Dutch trade circles. The fact that no fewer than 40 estates renewed tapping recently although the price for rubber is practically unaltered was considered to be decidedly unfavorable.

The increased rubber output by estates completely outweighs the short reduction in native exports, it is held, and the idea of enforced restrictions, therefore, is again receiving serious attention by Dutch planters. It is rumored that the Dutch East Indies government may again be approached on the question of rubber restrictions.

LATE MARKET PRICES

RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, DECEMBER 20, 1932

Crude Rubber

THERE has been no change in the general statistical position of crude rubber as a commodity during the last fortnight. Fluctuations in price levels over the last two weeks have not exceeded ¼ cent. Consumption reports continue to show a lack of activity on the part of the manufacturing industry. Shipments from the Far East, however, continue to come in sufficient volume to maintain stocks at record high levels.

In rubber trading circles the market has been characterized by extreme dullness with little buying interest in evidence and only small transactions negotiated. At the present levels, and with the statistical position so adverse to any rise in price the buying interests have no incentive to make any large stock commitments.

Prices on the outside New York market, as of December 20, for the more popular standard grades of crude rubber were as follows:

Plantations—

Ribbed Smoked Sheets—			
Spot-Dec.	.03 3/16	@	.03 5/16
Jan.-Mar.	—	@	.03 7/16
First Latex, crepe spot	—	@	.04⅛
Amber Crepe, No. 2	—	@	.03 1/16
Amber Crepe, No. 3	—	@	.03
Amber Crepe, No. 4	—	@	.02⅞
Brown Crepe, Clean thin	—	@	03
Brown Crepe, rolled	—	@	.02 11/16

Latex—

Liquid Latex, per gal.	.70	@	.75

Paras—

Up-river, fine	.07	@	.07½
Up-river, coarse	Nominal		
Acre, Bolivian, fine	.07½	@	.07¾
Caucho Ball, Upper	—	@	.03

Centrals—

Central scrap	.04	@	—
Esmeraldas	.04	@	—

Balata—

Block, Ciudad	—	@	.13

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
Dec.	2 19/32	@	2⅝d
Jan.-Mar.	2⅝	@	2 21/32d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers			
Spot	——	@	2¼d

Reclaimed Rubber

No changes have been reported in the prices for the leading grades of reclaimed rubber for the last two weeks. Under the prevailing market conditions, reclaimed rubber continues to hold up surprisingly well and the demand has been constant in spite of the higher market prices maintaining for reclaimed in comparison to crude. Late prices follow:

High Tensile

High Tensile Red	lb.	.04¾	@	.05
Super-Reclaim Black	lb.	.05	@	.05¼

Shoe

Washed	lb.	.05½	@	.05¾

Tube

No. 1 (Floating)	lb.	—	@	.06½
No. 2 (Compounded)	lb.	.04½	@	.04¾

Tires

Black	lb.	.03¾	@	.04
Black, selected tires	lb.	.04	@	.04¼
Dark Gray		.05	@	.05⅛
Light Gray	lb.	.05½	@	.06
White	lb.	.05½	@	.05¾
Truck, Heavy Gravity	lb.	.05	@	.05¼
Truck, Light Gravity	lb.	.05¼	@	.05½

Miscellaneous

Mechanical blends	lb.	.03	@	.03½

Scrap Rubber

There has been no changes in the general price levels for scrap rubber grades during the last fortnight. The demand from reclaimers still continues to a fair extent. Accumulations by dealers are reported to be better and junk dealers are again taking an interest in rubber scrap. It is reported that further reductions in freight rates after the first of the year will be of considerable help to the industry. Latest quotations on the leading grades of scrap follow:

(Prices to Consumer)

Auto tire peelings	ton	16.00	@	18.00
Mixed auto	ton	6.50	@	7.50
Clean solid truck tires	ton	24.00	@	27.50
Boots and shoes	ton	15.00	@	17.50
Arctics, untrimmed	ton	10.00	@	12.50
Inner tubes, No. 1	lb.	.02	@	.02¼
Inner tubes, No. 2, compounded	lb.	.01¼	@	.01⅝
Inner Tubes, Red	lb.	.01⅝	@	.01½

Cotton

COTTON has not reacted either way during the past fortnight, to any important extent. The prevailing low levels, although attractive, have not brought the market to any state of activity, and in view of the large stocks on hand there is little likelihood that the market will be disturbed by sharp price fluctuations. Buying interests continue restricted and trading is dull. Mill activities still continue good but with no new stimulus to demand for fabricated goods the market has very nearly reached a state of stagnation.

High, low and closing prices on the New York Cotton Exchange, as of December 20, were as follows:

	High	Dec. 20 Low	Close	Dec. 3 Close
Dec.	5.96	5.92	5.93	5.60
Jan.	5.98	5.97	5.92	5.60
Mar.	6.12	6.05	6.06	5.72

Tire Fabrics

The low prices which have characterized the chief grades of tire fabrics for the past few months have shown no material changes. The demand has been light, due to the restricted production schedule of the tire plants. Latest prices are reported as follows:

(Prices Net at the Mill)

CORD				
Peeler, carded, 23/4/3	lb.	.22	@	.22½
Peeler, carded, 23/5/3	lb.	.21	@	.21¼
Peeler, carded, 13/3/3	lb.	.18	@	.18½
Peeler, carded, 15/3/3	lb.	.19	@	.19¼
Egyptian, carded, 23/5/3	lb.	.34½	@	.35
Egyptian, combed, 23/5/3	lb.	.39½	@	.40
CHAFERS				
Carded, American, 8 oz.	lb.	.18	@	.18½
Carded, American, 10 oz.	lb.	.18	@	.18½
Carded, American, 12 oz.	lb.	.18	@	.18½
Carded, American, 14 oz.	lb.	.17½	@	.18
LENO BREAKER				
Carded, American, 8¼ oz.	lb.	.18	@	.21
Carded, American, 10¼ oz.	lb.	.18	@	.21
SQUARE WOVEN				
Carded, American, 17¼ oz. 23-11 ply	lb.	.21	@	.21¼
Carded, American, 17¼ oz. 10-5 ply	lb.	.17	@	.17½

Sheetings

Little demand was reported for sheeting constructions during the last two weeks. No changes in the already low prevailing prices were recorded. Late quotations follow:

40 inch, 2.50 yard	yd.	—	@	.05¾
40 inch, 2.85 yard	yd.	.04¾	@	.04¾
40 inch, 3.15 yard	yd.	—	@	.04¾
40 inch, 3.60 yard	yd.	—	@	.04¾
40 inch, 3.75 yard	yd.	.03¾	@	.03¾
40 inch, 4.25 yard	yd.	.03¾	@	.03¼

Ducks

No changes in prices have been reported for the leading duck constructions during the last fortnight. The market is dull.

Enameling	lb.	.18	@	.22
Belting and Hose	lb.	.19	@	.20
Single filling	lb.	.07½	@	.07¾
Double filling	lb.	.09½	@	.10

Closing Prices on Rubber Exchange of New York, Inc.

No 1 Standard Contract of 10 Tons*

FROM DECEMBER 6 TO DECEMBER 20, 1932

Date	Spot	Dec.	Jan.	Feb.	Mar.	Apr.	Sales
Dec. 6	3.22	3.16	3.21	3.26	3.31	3.34	22
7	3.25	3.20	3.26	3.31	3.36	3.39	11
8	3.23	3.19	3.24	3.29	3.34	3.37	23
9	3.23	3.19	3.20	3.24	3.28	3.34	7
10	3.25	3.24	3.25	3.28	3.31	3.34	1
12	3.23	3.16	3.21	3.25	3.30	3.32	100
13	3.23	3.20	3.20	3.26	3.30	3.34	2
14	3.22	3.15	3.21	3.26	3.31	3.34	16
15	3.22	3.18	3.24	3.29	3.34	3.40	21
16	3.22	3.15	3.25	3.34	3.36	3.40	16
17	3.28	3.17	3.27	3.36	3.37	3.41	3
19	3.29	3.23	3.35	3.39	3.44	3.47	32
20	3.32	3.20	3.32	3.38	3.44	3.48	18

*This contract will be superseded by "No. 1 B Standard" on April 1, 1933

CHEMICALS

THE seasonal dullness in production schedules generally has been reflected in the lack of interest in the rubber chemical market over the last fortnight. No new price changes have been reported. Small-lot orders are the rule and there is very little inquiry interest in prices. Replacement demand for stocks is expected to manifest itself, however, after the first of the year. Late quotations on the general list of rubber chemicals follow:

ACCELERATORS

Organic

A-1	lb.	.24 @	.27
A-5-10	lb.	.33 @	.36
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-20	lb.	.64 @	.68
A-32	lb.	.80 @	.95
Aldehyde ammonia, crystals	lb.	.65 @	.67
Altax	lb.		
Captax	lb		
Crylene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.42 @	.43
Diphenylguanidine	lb.	.33 @	.34
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.37½@	.42
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.46 @	.47
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.37½@	.40
Monex	lb.	3.25 @	—
Oxynone	lb.	.88 @	.90
Phenex	lb.	.50 @	.55
R & H 40	lb.	.40 @	.41
R & H 50	lb.	.40 @	.41
R-2	lb.	1.95 @	2.15
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Thiocarbanilid, drums	lb.	.25 @	.27
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.53 @	.60
Tuads	lb.		
Ureka	lb.	.75 @	1.00
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.	.50 @	.60
Zimate	lb.		

Inorganic

Litharge, domestic	lb.	.05¾@	—
Magnesia, calcined,			
light	per 100 lb.	5.25 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)

Blues

Prussian	lb.	.36 @	.37
Ultramarine	lb.	.06 @	.30

Browns

Sienna, Italian	lb.	.04 @	.08
Umber, Turkey	lb.	.04 @	.06

Greens

Chrome, light	lb.	.23 @	.26
medium	lb.	.26 @	.28
dark	lb.	.28 @	.33
Chromium Oxide, bbl.	lb.	.23 @	.27

Reds

Antimony

crimson, 15/7	lb.	.40 @	—
sulfur, free	lb.	.52 @	.56
Indian English	lb.	.09 @	.10
Domestic (Maroon)	lb.	.11 @	—
Red oxide, pure	lb.	.10 @	.12
Rub-Er-Red, f.o.b. Easton	lb.	.03¾@	—

Whites

Lithopone, Albalith	lb.	.04½@	.04¾
Lithopone, Azolith	lb.	.04½@	.04¾
Titanium oxide	lb.	.17 @	.19
Titanox B	lb.	.06 @	.06½
Titanox C	lb.	.06 @	.06½

Zinc Oxide—American Process

American Azo:			
ZZZ (lead free)	lb.	.05¾@	.06
ZZ (leaded)	lb.	.05½@	.05¾
Horsehead Lead Free Brand:			
Selected	lb.	.05¾@	.06
Special	lb.	.05¾@	.06
XX Red	lb.	.05¾@	.06
XX	lb.	.05¾@	.06
XX Green	lb.	.05¾@	.06
Leaded Brand, Standard	lb.	.05½@	.05¾
Sterling	lb.	.05½@	.05¾
Superior	lb.	.05½@	.05¾
Lehigh	lb.	.05¼@	.05½
U. S. P., bbls.	lb.	— @	.12¾
Kadox, black label	lb.	.09⅜@	.09⅞
Blue label	lb.	.08⅜@	.08⅞
Red label	lb.	.07¼@	.07½
Cryptone, No. 19	lb.	.06½@	.06¾
Cryptone CB, No. 21	lb.	.06½@	.06¾
XX Zinc Sulphide, bbls.	lb.	— @	.13
St. Joe, black label	lb.	.05¾@	.06
green label	lb.	.05¾@	.06
red label	lb.	.05¾@	.06

Zinc Oxide—French Process

Anaconda, lead free	lb.	.05¾@	.06
Anaconda, selected lead free	lb.	.06¼@	.06½
Florence White seal, bbls.	lb.	— @	.10⅞
Green seal	lb.	.09¾@	.09⅞
Red seal	lb.	.08¾@	.08⅞

Yellows

Chrome	lb.	.16 @	.16½
Ocher, dom. med.	lb.	.01½@	.02

BLACKS

Arrow "Aerfloted"			
c.l. f.o.b. works, bags	lb.	.02¾@	—
c.l. f.o.b. works, cases	lb.	.04¼@	—
less c.l. f.o.b. works	lb.	.05¼@	.07
Arrow "Aerfloted" Specification, c.l. f.o.b. wks., bags	lb.	.03 @	—
Bone, powdered	lb.	.05½@	.12½
Carbon, compressed	lb.	.02¾@	.07
uncompressed	lb.	.02¾@	.07
"Certified," Cabot			
c.l. f.o.b. works, bags	lb.	.02¾@	—
c.l. f.o.b. works, cases	lb.	.04¼@	—
less c.l. f.o.b. works	lb.	.05¼@	.07
"Disperso" f.o.b. La.	lb.	.028 @	.071
f.o.b. Texas	lb.	.02¾@	.07
Drop, bbls.	lb.	.05½@	.14
"Excello," compressed	lb.	.03 @	—
"Fumonex"	lb.	.02½@	.06
"Gastex"	lb.	.02½@	.06
Lampblack	lb.	.06 @	.08
"Micronex"			
c.l. f.o.b. works, bags	lb.	.03 @	—
c.l. f.o.b. works, cases	lb.	.04½@	—
less c.l. f.o.b. works	lb.	.05½@	.07
"Supreme"	lb.	.02¾@	—
Thermatomic—"P 33"	lb.	—	—
"Thermax"	lb.	—	—
United, "Dixie" and "Kosmos"			
c.l. f.o.b. works, bags	lb.	.02¾@	—
c.l. f.o.b. works, cases	lb.	.04¼@	—
less c.l. f.o.b. works	lb.	.05¼@	.07
"Velvetex"	lb.	.02 @	.05

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate, lump	lb.	.10½@	.12
Asbestine	ton	13.40 @	14.00
Barium carbonate (98-100%)	lb.	.05 @	—
Barium Dust	lb.	.05 @	.06
Barytes southern off-color	ton	12.00 @	18.00
Western prime white	ton	33.00 @	—
Basofor	lb.	.04½@	—
Bentonite	lb.	.02 @	.03
Blanc fixe dry f.o.b. works	ton	60.00 @	75.00
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk, precipitated			
Suprex white, extra lt.	ton	60.00 @	70.00
heavy	ton	45.00 @	55.00
Clay, Kaolin, domestic	ton	6.00 @	7.00
Aerfloted, Suprex	ton	6.50 @	8.00
Congaree	ton	9.00 @	—
Dark Blue Ridge	ton		
Dixie	ton		
Langford	ton		
Lexington	ton	10.00 @	22.00
Par	ton		
Tensulite		15.00 @	—
Cotton Flock	lb.	.08 @	.16
Glues, extra white	lb.	.15 @	.22
medium white	lb.	.12 @	.14
Kalite No. 1	ton	30.00 @	55.00
Kalite No. 3	ton	40.00 @	65.00
Magnesia, carbonate	lb.	.05¾@	.06
Mica	lb.	.04 @	—
Rottonstone (powdered)	ton	23.50 @	28.00
Soapstone, powdered	ton	16.00 @	18.00
Starch, powdered	cwt.	2.34 @	—
Talc, domestic	ton	12.00 @	15.00
Pyrax A	ton		
Whiting, commercial	cwt.	.85 @	1.10
English cliffstone	cwt.	1.50 @	1.70
Sussex	ton		
Witco	ton	20.00 @	—
Zinc Carbonate	lb.	.10½@	—
Zinc Stearate	lb.	.20½@	—

MINERAL RUBBER

Genasco (factory	ton	40.00 @	42.00
Granulated M. R.	ton		
Hard Hydrocarbon	ton		
Parmr, solid	ton	23.00 @	28.00
Pioneer. MR, solid	ton	40.00 @	42.00
Pioneer-granulated	ton	50.00 @	52.00
R & H Hydro-Carbon	ton	27.05 @	29.00

SOFTENERS

Acids

Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulfuric, 66 degrees	cwt.	1.60 @	1.95
Tartaric, crystals	lb.	— @	.26½
Acids, Fatty			
Laurex	lb.	.15 @	.16
Stearex	lb.	.08 @	.12
Stearic, double pressed	lb.	.08 @	.12
Alkalies			
Caustic soda, 76%	cwt.	2.50 @	2.90
Soda Ash, 58% C.L.	cwt.	1.15 @	1.17½
Oils			
Corn, refined, bbls.	lb.	.05½@	.06
Cottonseed, crude		.03½@	.04
Degras (c.l. 100 bbls.)	lb.	.02¾@	—
Less c.l. (10-25 bbls.)	lb.	.03 @	—
Lots less than 10 bbls.	lb.	.03¼@	—
Fluxrite	lb.	.05½@	.06¼
Palm Lagos	lb.	.03¼@	.03½
Niger	lb.	.02¾@	.03
Para-Flux	gal.	.17 @	—
Petrolatum, white	lb.	.08 @	.08½
Pigmentaroil	gal.	.18 @	.23
Pine, steam distilled	gal.	.59 @	.61
destructively distilled	gal.	.58 @	.62
Witco Palm Oil	lb.	.07½@	—
Witco Softener (f.o.b. wks.)	lb.	.02 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.05 @	.06
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt. bbl.		7.00 @	—
Rosin, grade K, 280 lb. bbl.		4.35 @	—
Pigmentar	gal.	.18 @	.23
Tar Retort, 50 gal.	bbl.	10.00 @	11.00
Solvents			
Acetone, pure	lb.	.10 @	.13
Alcohol, denatured,			
No. 1 bbls.	gal.	.37 @	.45
Benzol, 90%	gal.	.20 @	.21
Carbon, bisulfide	lb.	.05½@	.06¾
Carbon, tetrachloride	lb.	.06¼@	.07
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10½
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.26 @	.28
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Turpentine, spirits	gal.	.45¼@	—
wood	gal.	— @	.40
destructively distilled	gal.	.35 @	—
Waxes			
Beeswax, white	lb.	.30 @	.32
Carnauba	lb.	.25 @	.26
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.05 @	.06
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffin (c.l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.02 @	—
White crude scale 124/126	lb.	.02 @	—
Refined, 125/127	lb.	.02¾@	—
Refined, 128/130	lb.	.03¼@	—
Refined, 135/137	lb.	.04 @	—
Refined, 138/140	lb.	.06¾@	—

ANTI-OXIDANTS

AgeRite, Gel	lb.		
Powder	lb.		
Resin	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Neozone	lb.		
Oxynone	lb.	.88 @	.90
Resistox	lb.	.54 @	.57
Retardex	lb.	.35 @	.40
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.60

SPECIALTIES

Aromatics- Rodo	lb.		
Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.30
Tonox	lb.	.56 @	.60

SUBSTITUTES

Black	lb.	.06 @	.08
White	lb.	.08 @	.12
Brown	lb.	.07 @	.11

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.04 @	—
Sulfur flour,			
Ref'n'd. 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags	cwt.	1.75 @	2.10
Tellur	lb		
Vandex	lb		

Attention!

Chemists and Chemical Engineers of the New York Metropolitan Area

YOUR Committee on Unemployment and Relief sends you this Message through the Courtesy of THE RUBBER AGE.

We are proud of the fortitude with which unemployed chemists and chemical engineers are meeting the test of this depression. It is the pioneer American spirit, and we intend to keep it alive. We represent you and we must have your support.

Every chemist or chemical engineer with a regular income, no matter how small, can contribute something each month. The amount you are able to give is not the true measure of the value of your contribution. When you know your friends are behind you, you're twice the man you are when you have to go it alone. If you've ever been out of a job, you know that's when you need friendly encouragement most.

Send your share in regularly each month, no matter how small it has to be. Make it as generous as you can, of course. No money you give in the present emergency will be better spent. Make checks payable to R. T. BALDWIN, Treasurer.

COMMITTEE ON UNEMPLOYMENT AND RELIEF FOR CHEMISTS AND CHEMICAL ENGINEERS

300 Madison Ave., New York, N. Y.

FRANK G. BREYER, *Chairman.*

UNEMPLOYED RUBBER CHEMISTS
Should register at once with this committee.

The RUBBER AGE

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More About Latex

WITH the steadily increasing application of latex in rubber goods manufacture it is both timely and of particular interest to publish Mr. W. J. R. Hauser's paper on the "Impregnation of Textiles With Latex" in this issue of THE RUBBER AGE. This is a subject which has been given considerable research attention abroad and is being followed closely by manufacturers on this side of the Atlantic.

Another feature article in this issue is a comprehensive survey of the uses of rubber to the printing industry. It is interesting to note that here also, latex is beginning to have direct applications.